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COST OF PRODUCING SUGAR

IN THE

UNITED STATES, GERMANY, AUSTRIA-HUNGARY, RUSSIA AND CUBA.

QUALITY OF RAW MATERIAL.

PRICE OF SUGAR BEETS.

COST OF FARM LABOR.

EUROPEAN WAR AND THE PRICE
OF SUGAR

RUSSIA, THE GREAT SUGAR PRODUCING NATION OF THE FUTURE.

STATISTICAL TABLES—COMPARISON
OF FIELD AND FACTORY RESULTS.

BY

TRUMAN G. PALMER

Secretary, United States Beet Sugar Industry

901-903 Union Trust Building

WASHINGTON, D. C.

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COST OF PRODUCING SUGAR

In arriving at the relative cost of producing sugar in the United States and Europe, three factors are to be considered.

- ✓ (1) The cost of erecting factories of a given capacity in the different countries and the consequent margin of profit required in order to return a given rate of interest on the investment,
- ✓ (2) The cost of operating factories, and
- (3) The cost of raw material, *i. e.*, the cost per pound of the extractable sugar in the beet, laid down at the factory gates before the factory commences to work them.

In Europe it costs approximately one-half as much as it costs in the United States to erect a factory of a given capacity, the number of operatives required is about the same, while the wage rate is but a fraction of what it is in the United States. In this study, however, I shall confine myself to a consideration of the quality and cost of raw material.

QUALITY OF RAW MATERIAL.

In the manufacture of sugar the cost of raw material depends upon its quality as well as upon the price per ton. A ton of beets or cane is valuable for sugar-making purposes, in proportion not only to its sugar content, but to its purity.

The two plants from which the world derives its sugar are as dissimilar as well could be imagined. Sugar cane is a weed in the tropics, springing from the same root year after year without replanting and containing about the same sugar content whether growing wild or under cultivation; about the same now as generations ago. On the other hand, the sugar beet is the most scientifically bred plant in the world. Originally containing only 4 to 5 per cent of sugar and having a low purity, it now contains from 15 to more than 20 per cent of sugar and is of a much higher purity, the latter enabling the factory to extract a greater percentage of the sugar con-

COST OF PRODUCING SUGAR.

tained in the root. But while responding to science and to correct cultural methods more readily than does any other plant known, it yields the poorest results of any plant, both in quantity and quality if correct cultural methods be not applied to it; hence a knowledge of and an application of correct cultural methods by the farmers growing the crop is of primary importance.

The progress made in the United States in raising the quality of the beet has been marked, the extractable raw sugar in a ton of beets having increased in twenty years from 183.90 pounds to 263.16 pounds, our present average extraction being greater than was the extraction in any country in Europe twenty years ago. But while we have been progressing, Europe also has progressed and due to her superior cultural methods, which our farmers are slow to adopt, Europe still excels us, both in tonnage per acre and in the purity of her beets, only Russia falling below us in tonnage per acre.

If the average quality of the beets and the tonnage per acre secured in the various beet sugar districts of the United States approached the maximum results which reasonably could be expected, the outlook for eventually competing with Europe would be discouraging; but when we consider the fact that there scarcely is a sugar beet district in the United States where numbers of farmers do not produce a greater tonnage of high grade beets than are produced in the best districts of Europe, it is plain to be seen that our low averages result from a lack of education on the part of our farmers.

James Wilson grew over 20 tons of high grade beets per acre in Iowa year after year before he became Secretary of Agriculture and he is convinced that when our farmers shall have become accustomed to the culture of beets they will produce at least that tonnage, which is 25 per cent in excess of what the German farmers are able to coax from their worn-out soils. In the judgment of those most familiar with the industry, it is not a question of soil or of climate, but of cultural education.

PRICE OF SUGAR BEETS IN EUROPE AND IN THE UNITED STATES.

Germany, Russia and Austria-Hungary are the dominant beet sugar producing countries of the world. Of the 9,000,000 tons of beet sugar annually produced in Europe, 7,000,000 tons, or 77%, are produced in these three countries, which also export 2,500,000 tons annually, or 83% of the total sugar exports of Europe. Sugar conditions in other European countries do not materially affect the international sugar situation, and when comparing the cost of raw material at home and abroad, these are the countries which must be taken into consideration.

The beet sugar produced in the United States is refined sugar for direct consumption, but to afford an exact comparison, the United States production of refined sugar per ton of beets, as given by the Department of Agriculture, has been reduced to terms of raw, on the basis of 100 pounds of raw being equivalent to 90 pounds of refined.

Table No. VII, attached hereto, shows the average number of pounds of raw sugar extracted from a 2,000 pound ton of beets in the United States and in various European countries for a series of years.

For the five-year period from 1907-08 to 1911-12 it will be seen that the extraction was as follows:

Germany	328.30 lbs.
Russia	316.98 lbs.
Austria-Hungary	315.20 lbs.
United States	274.57 lbs.

As will be seen by the attached data, the north German and the Holland sugar manufacturers' associations have fixed the 1913-14 price of beets in the two countries at an average of \$4.34 per 2,000 pound ton, delivered at the factory gates, while in the south, the factories are holding out for \$4.32½.

As also will be seen by the attached data the Prague Association of Raw Sugar Manufacturers of Bohemia and the Organization of Sugar Beet Growers have agreed upon the price of \$3.68 per 2,000 pound ton for the 1913-14 campaign, delivered at receiving stations, and \$3.88 delivered at the factory. The latest advices, as given in

foreign sugar journals, are to the effect that other Austrian factory and beet growers associations are perfecting agreements on practically the same basis.

The latest obtainable figures on Russia are given by the Minister of Finance and are for the campaign 1911-12, when the average price paid throughout the Russian Empire was \$3.90 per 2,000 pound ton. The Minister's report does not state whether the price is for beets delivered at the factory or at receiving stations, but in the second calculation I have added 20¢ per ton for freight, as in Austria.

The average price paid to farmers for beets in the United States, as given in the April issue of the Crop Reporter, issued by the Department of Agriculture, was \$5.50 per ton in 1911 and \$5.82 per ton in 1912. Direct reports from 65 factories show an average freight charge on beets, paid by the factories, of 43 cents per ton in 1911, 45 cents in 1912, and 41 cents per ton for agricultural expenses in 1911, 38 cents for 1912.

Thus the average cost of beets, laid down at the factory gates in the United States, was \$6.34 per ton in 1911 and \$6.65 in 1912.

Assuming that the official figures for Russia are for beets at the farm and not delivered to the factory, and that the delivered price as given in Germany includes 20 cents per ton for freight, as in Austria, the following table shows the average amount paid to farmers in four countries for each 100 pounds of extractable raw sugar which their beets contain.

Farmers' Receipts for Raw Material.

	Farm price of beets per 2000 lb. ton.	Average extraction of raw sugar per 2000 lb. ton of beets, 1907-11.	Average farm cost of 100 lbs. of sugar in the beet.	U. S. farm cost per 100 lbs. of raw sugar in the beet in excess of cost in other countries.
United States . . .	\$5.82	274.57	\$2.12	.....
Russia	3.90	316.98	1.23	.89%
Austria-Hungary	3.68	315.20	1.16	.96%
Germany	4.14	328.30	1.26	.86%

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COST OF BEETS DELIVERED AT THE FACTORY.

To determine the cost of raw material to the factory, there must be added to the price paid the farmer for his beets, the agricultural expense borne by the factory and the freight on the beets from receiving station to factory. The great agricultural expense which formerly attached to the growing of beets in Europe practically has disappeared, since European farmers thoroughly understand the cultivation of this crop, and although they naturally strive to secure a high price per ton, they are anxious to plant beets because of the indirect agricultural advantages, and while the agricultural expense is decreasing in the United States and eventually will be eliminated here as it has been in Europe, at present it is an important and a necessary item of expense attaching to the cost of raw material in the United States. This item consists of the cost of soliciting acreage, superintendence of fields by the chief factory agriculturist and his assistants during the planting and growing season, wear and tear on agricultural implements loaned to farmers, and such other expense as is incurred by the factory in the field.

In Europe, where the custom of rotating cereal crops with a hoed crop is universal, the beet supply is grown closer to the factories than it is in the United States and the freight charges are correspondingly lower. Although the freight expense in the United States was greater by 2 cents per ton in 1912 than in 1911, as compared with earlier years, it is much less now and it will continue to be a decreasing item of expense.

The following table shows the average cost to the factory of 100 pounds of extractable raw sugar in the beets, delivered at the factory gates, in the United States and in the three principal European beet sugar producing countries :

COST OF PRODUCING SUGAR.

Factory Cost of Raw Material.

	Cost of beets per 2,000 lb. ton.	Average extrac- tion of raw sugar per ton of beets, 1907-1911.	Average cost of 100 lbs. of raw sugar in the beet.	U. S. cost per 100 lbs. of raw sugar in the beet in ex- cess of cost in other countries.
	Dollars.	Pounds.	Dollars.	Dollars.
<i>United States.</i>				
Average price paid farmers in 1912	\$5.82			
Average freight paid by factories . . . . .	.45			
Average agricultural expense incurred by factories . . . . .	.38			
Total per ton	6.65	274.57	2.42	. . . . .
<i>Russia.</i>				
Average price paid for beets in 1911	\$3.90			
Assuming for freight as in Austria . . . . .	.20			
Total per ton	4.10	316.98	1.29	1.13
<i>Austria-Hungary.</i>				
Bohemia, 1913 contract price at receiving stations	\$3.68			
Contract price delivered at factory	3.88	315.20	1.23	1.19
<i>Germany.</i>				
Average cost, purchase beets, 1904 to 1910	\$4.44			
North Germany, average 1913 contract price purchase beets, delivered at factory gates	4.34	328.30	1.32	1.10

The difference in the average cost of raw material in our principal beet sugar producing States, is given in the following table. The average cost of beets laid down at the factory is derived by adding to the price paid per ton of beets to farmers in 1912, as given by the Department of Agriculture, 45 cents, average freight paid by 65 factories, and 38 cents, average agricultural expense. As in 1912 the Department changed its classification by grouping Wisconsin with certain other States and forming a new group for "other States," the extraction as shown for these two groups in the following table may differ slightly, though not materially, from what would be shown had the Department not changed its classification.

Factory Cost of Raw Material by States.

	Average cost of beets per ton laid down at factory, 1912.	Pounds of raw sugar extracted per ton of beets, 1907-11.*	Cost of 100 pounds of extractable raw sugar in the beet.
California	\$7.29	324.93	\$2.24
Utah and Idaho . .	5.80	282.03	2.05
Colorado	6.79	280.80	2.42
Michigan	6.52	263.37	2.48
Ohio, Indiana, Illinois and Wisconsin . . .	6.43	260.93	2.46
Other States . . .	6.64	260.74	2.55

* Based on 100 pounds of raw being equal to 90 pounds of refined sugar.

FROM THE FARMING VIEWPOINT.

As stated before, the drouth of 1911 resulted in an abnormally low tonnage per acre in Western Europe. The yield per acre during the preceding five years was as follows in the four countries mentioned :

Tonnage per Acre.

Average for the Year—	Germany.	Russia.	Austria-Hungary.	United States.
1906-07	14.16	7.95	11.70	11.26
1907-08	13.36	6.31	11.29	10.16
1908-09	12.08	6.99	10.71	9.36
1909-10	12.56	5.64	11.28	9.71
1910-11	14.70	8.74	12.36	10.17
Average of 5 yrs. 1907-1911	13.37	7.126	11.47	10.13

Taking the above average yield for five years and applying the latest available figures concerning the price paid to farmers for beets, and assuming that the cost of freight in Germany is 20 cents per ton, as in Austria, the average gross returns per acre to farmers in the four countries are as follows :

Gross Returns to Farmers Per Acre.

Russia	7.126 tons per acre @ \$3.90 per ton,	\$27.79 per acre
Austria-Hungary	11.47 " " @ 3.68 "	42.21 "
Germany	13.37 " " @ 4.14 "	55.35 "
United States	10.13 " " @ 5.82 "	58.95 "

The variation in gross amount per acre received by farmers for their beet crop in our leading beet sugar producing States is as follows :

	Tons of beets per acre, 1907-11.	Price paid to farmers per ton for beets in 1912.	Gross returns per acre.
California . . .	10.37	\$6.46	\$66.99
Utah and Idaho .	11.32	4.97	62.57
Colorado . . .	10.64	5.96	63.41
Michigan . . .	8.58	5.69	48.82
Wisconsin . . .	10.02	*5.60	56.11
Other States . .	9.07	5.81	52.69

* Under new classification by Department of Agriculture, this is the average price paid in Wisconsin, Indiana, Ohio and Illinois.

Considering the difference in the cost of farm labor in the United States and in Europe, it is evident that the disparity in the cost of raw material is not due to inordinate profits made by American farmers, hence it is impracticable to try and remedy it through a material lowering of the price of beets in the United States.

The remedy lies with the education of our farmers, who, as compared with German farmers, produce 24% less tonnage of beets per acre and of a quality which yields the factory 16% less sugar per ton. As a result, from 1906 to 1910 inclusive, American farmers produced an average of but 2,757 pounds of extractable raw sugar per acre, as compared with 4,355 pounds produced per acre in Germany during the same period. From a like quality of beets American factories extract as much sugar as do European factories, and the equalization of the cost of raw material only can be accomplished on the farm. Here it is a new crop, while European farmers have had generations of experience.

PRICE OF BEETS IN GERMANY.

In Germany, beets are secured in three ways (1) beets grown by the factories, (2) contract and shareholders' beets, (3) purchase beets. The percentage of each class, as given by the German Imperial Bureau of Statistics, is as follows:

Factory grown beets	4.09%
Contract and shareholders' beets (co-operative)	40.48%
Purchase beets (Kaufrueben)	55.43%

The low initial price paid for the first two classes of beets above mentioned does not necessarily indicate the real value of the beets for sugar-making purposes, as after the campaign is over, an additional distribution of a certain amount per ton is made to the growers, the amount depending upon the success of the campaign. The size of the second distribution is more dependent upon the price of sugar than of any other condition and the total amount received per ton of beets includes the manufacturing as well as the agricultural profits. Presumably for this reason the German Government does not publish the average price for either of these classes of beets, but confines itself to reporting the cost of what are termed purchase beets, beets which are purchased by the factories, regardless of any consideration except the value of the beets for sugar-making purposes and where the price is not affected by reason of free seed or free pulp or by any other consideration. The cost of these beets for the past eight years, as given by the German Imperial Bureau of Statistics, has been as follows:

Year.	Average Prices.	
	Per Metric Ton.	Per 2,000 lb. Ton.
	Marks.	Dollars.
1904-05	20.10	4.34
1905-06	20.00	4.32
1906-07	18.70	4.04
1907-08	19.60	4.23
1908-09	21.30	4.60
1909-10	21.90	4.73
1910-11	22.50	4.86
Average for seven years . . . . .	. .	4.44
1911-12	25.10	5.42

The price paid for beets in Germany and other portions of western Europe in 1911 can not be used as a criterion, because of the drouth which that year prevailed throughout that section and thereby created an abnormal price for both beets and sugar. Prior to July of that year, crop conditions were favorable and, as is their custom, raw sugar factories sold sugar ahead for October-December delivery. In July a prolonged drouth set in, the result of which was that the tonnage of beets harvested in the autumn amounted to less than 8 tons per acre in Germany, or but little over one-half the usual yield. With a shortage in Europe of 1,760,000 tons of sugar and the consequent high prices, sugar

factories bid up the price of beets to a figure never before known, even importing large quantities from Holland, thus shortening the campaign of the Dutch factories. The German factories secured only enough beets to operate an average of 42 days, as compared with 70 days the year before and many factories were compelled to purchase raw sugar on the Magdeburg market at high prices in order to fulfill their advance sales contracts.

Following the half crop of 1911, the plantings of beets increased, and the 1912 beet yield was a million tons in excess of any preceding year. With this bumper crop, not only has the price of sugar, but of beets gone down, the drop in the price of beets in Germany being even greater than it was in 1906, as will be seen by the following excerpt from the *Journal des Fabricants de Sucre*, Paris, February 12, 1913.

PROVINCE OF SAXONY.

(Excerpt from Leading Article.)

In consequence of better offers having been made for beets by the factories it is not likely that a diminution of acreage to beets will occur in Germany (Province Saxony), 1M. to Mk. 1.10 for 50 Kg. of beets will be paid (equal to \$4.31 per short ton); in addition the grower is to receive 50% of pulp.

(Excerpt from *Die Deutsche Zuckerindustrie*, March 14, 1913, page 239).

GERMANY.

Price of Beets in Germany.

The beet prices are dependent usually on the current market price of sugar. At the end of 1911 the price of raw sugar was very high, and this is the reason why all German beet sugar factories were able to pay high prices for their beets; but recently the price of sugar has reached a low level, wherefore the sugar factories of Germany, especially those of South Germany, are determined to secure their beets at a lower price than they have been paying up to the present time. This was brought to the attention of Secretary of State Frhr. Zorn v. Bulach in the House of Representatives of Alsace-Lorraine, and he was asked what the Government intended doing about the proposed reduction in the price of beets. The honorable gentleman conferred with Representative Wehrung, and after the conference stated that it was his opinion that the farmers should organize and protest against the lowering of the price of beets, and that the Government is not in a position to bring pressure to bear upon the farmers to accept a lower price for

their beets, but that the farmers should have patience and when the price of sugar in the world market shall warrant, the price of beets would undoubtedly return to the level of what it was in the last campaign.

NETHERLANDS (Ibid).

Nord-Brabant, 12th of March, 1913.

Contracts for beets are being signed up in different districts. Fixed prices for beets have been determined upon as follows for the campaign 1913-14.

Dist. 1 and 2,	12 Florens per Metric ton (equals \$4.38 per short ton).
" 3	11 " " " (" 4.01 " " ").
" 4	12.70 " " " (" 4.63 " " ").
(Average 4.34).	

These prices are paid for beets delivered at the factory gates and no increase or deferred payment will be made for deferred deliveries. The "Bund" of sugar manufacturers made an agreement with the German sugar factory association to the effect that these organizations will cooperate with each other in keeping the price the same in both countries.

From the above it appears that the average price of purchase beets in north Germany in 1913-14 delivered at the factory will be \$4.34 per 2,000 pound ton, or 10 cents per ton less than was paid during the 7 years preceding 1911.

The following article indicates that the price of beets for this year is to be about the same in south Germany as it is in the northern provinces of the Empire:

(Excerpt from Die Deutsche Zuckerindustrie, April 5th, 1913, page 980.)

BEET GROWERS *versus* FACTORIES IN SOUTHERN GERMANY.

The Strassburger Post publishes the following article:

All those who have the interest of agriculture at heart will be unpleasantly surprised at the agitation started by beet growers against the sugar factories; the agitators do not wish to look facts in the face. Any agronomist as well as those who have experience in beet growing will frankly admit that beet culture is a blessing for agriculture in general, and 1 Mark per 50 Kg. (equal to \$4.32½ per short ton) paid for beets, leaves a fair margin for the grower.

Unfortunately, the factory is not in a position to adjust the sale price of sugar to the purchase price of beets, but has to part with

the sugar at whatever the world's market price happens to be. Considering the fact that sugar is a product dealt in by the world's producers and costs (raw) now 9.75 mark per 50 Kg. (equal to \$2.11 per 100 lbs.) factory price, we do not see how it is possible to pay more than *one mark per centner* of beets (\$4.32½ per short ton).

All agitation in the world will not remedy this state of affairs; even experts will tell you that very little profit can be made by manufacturers paying 1 Mark per centner (\$4.32½ per short ton) if sugar is not going to be higher in the world's markets.

Beet growers should realize and know what are their real interests and should not allow themselves to be incited by their so-called friends to carry on a senseless agitation, a campaign against the beet sugar factory owners with whom they should have a community of interests.

PRICE OF BEETS IN AUSTRIA-HUNGARY.

The Prague (Bohemia) organization of raw sugar manufacturers and the Organization of Beet Growers have fixed the price of beets for the 1913-14 campaign at \$3.68 per short ton at receiving stations, and \$3.88 delivered at the factories.

On February 28 the Brünn (Moravia) raw sugar manufacturers and the beet growers were close to an agreement. The growers were demanding \$3.95 per short ton for all beets, with an increase of 18 cents per ton if the factory price of raw sugar during October, November and December should exceed 2 cents per pound. The factories were willing to pay \$3.95 for one group, but were holding out for \$3.78 for other beets, with an increase of 14 cents per ton if the price of sugar October-December should exceed 2.11 cents per pound.

The factories of Boemish Brod were offering but \$3.68 per short ton, with an increase of 18 cents per ton if the October-December price of raw sugar should exceed \$1.89 per 100 pounds.

Austrian export sugar is shipped down the Elbe and across Germany to Hamburg, at which port the average price in 1912, October-December, was 2.06 cents per pound.

(Excerpt from Prager Zuckermarkt, February 26, 1913. Page 168.
Beet Sugar Purchases, Campaign 1913-14.)

The Association of the Prague Raw Sugar factories has perfected in harmony with the Organization of Sugar Beet Growers their agreement for delivery of beets during campaign 1913-14 on the basis of 2.10 kronen per double zentner (220 pounds) delivered at factory (\$3.88 per short ton); and on the basis 2.00 kronen per double zentner (\$3.68 per short ton), delivered at the field receiving station. Conditions of delivery to remain the same as in preceding campaign 1911-12.

(Excerpt from the Journal des Fabricants de Sucre, March 12, 1913.)

AUSTRIA.

Bohemia-Moravia.

From leading article by G. Dureau.

In Austria negotiations regarding Beet Contracts and agreements about Kaufrueben (purchase beets) are being carried on.

The prospects for an understanding between the growers and factories now rest upon a solid basis and it is most likely that shortly an arrangement acceptable to both sides will be made.

At a meeting in Brünn, Moravia, held on February 28th, 1913, by representatives of sugar factories and delegates of the Organization of Beet Growers, the sugar factories advocated the adoption of a minimum price as a basis of a certain level eventually attained by sugar quotations; the growers agreeing to this in principle, have asked that the price of purchase beets be fixed at 2.15 kronen per 100 Kg. (= \$3.95 per short ton) with an increase of 10 hellers (18 cents per short ton of beets)—if sugar quotations rise above 22 kronen (\$4.46 per 100 Kg. sugar, or \$2.00 per 100 lbs.).

The factory delegates have offered 2.05 kronen per 100 Kg. beets (= \$3.78 per short ton) for the first group (district)—and 2.15 kronen per 100 Kg. for every kronen (\$0.203) rise in price of sugar beyond 22 kronen—(\$4.46 per 100 Kg. sugar, or \$2.00 per 100 lbs.).

In some parts of Moravia beets were purchased at fixed prices.

The Sugar Factories of *Boemish Brod* offer 2 kronen per 100 Kg. beets (= \$3.68 per short ton) with an increase for every 100 Kg. of 10 hellers (18 cents per short ton) if sugar quotations reach above 20.50 kronen (\$4.16 per 100 Kg. of sugar, or \$1.89 per 100 lbs.) delivery October-December, 1913.

The following tabulated figures for the various provinces of Austria-Hungary are from the official publication, *Mitteilungen des K. K. Finans Ministeriums*. Only minimum and maximum prices are given in the report of the Finance Minister and it is impossible to derive the average price. I have added, however, a column giving the mean of the minimum and maximum.

COST OF PRODUCING SUGAR.

Bohemia. Official Figures.

Year.	Hellers per 100 kilos.		Per 2,000 pound ton.		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	130	260	\$2.39	\$4.79	\$3.59
1896-97	160	270	2.95	4.97	3.96
1897-98	160	260	2.95	4.79	2.87
1898-99	160	250	3.13	4.61	3.87
1899-1900	170	274	3.13	5.05	4.09
1900-1	180	274	3.32	5.05	4.19
1901-2	160	250	2.95	4.61	3.78
1902-3	140	272	2.58	5.02	3.80
1903-4	140	250	2.58	4.61	3.60
1904-5	160	276	2.95	5.09	4.02
1905-6	170	290	3.13	5.35	4.24
1906-7	160	290	2.95	5.35	4.15
1907-8	170	265	3.13	4.89	4.01
1908-9	185	282	3.41	5.19	4.30

Moravia. Official Figures.

Year.	Hellers per 100 kilos.		Per 2,000 pound ton.		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	172	260	\$3.15	\$4.80	\$3.98
1896-97	160	236	2.95	4.35	3.65
1897-98	160	240	2.95	4.42	3.69
1898-99	170	249	3.13	4.59	3.86
1899-1900	170	245	3.13	4.51	3.82
1900-1	170	274	3.13	5.05	4.10
1901-2	170	242	3.13	4.47	3.80
1902-3	162	240	2.99	4.42	3.70
1903-4	170	237	3.13	4.37	3.75
1904-5	168	260	3.10	4.80	3.95
1905-6	183	275	3.41	5.08	4.24
1906-7	180	274	3.32	5.06	4.19
1907-8	170	264	3.13	4.87	4.00
1908-9	205	284	3.77	5.23	4.50

Silesia. Official Figures.

Year	Hellers per 100 kilos		Per 2,000 pound ton		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	210	250	\$3.87	\$4.61	\$4.24
1896-97	190	237	3.50	4.37	3.94
1897-98	190	200	3.50	3.69	3.60
1898-99	206	248	3.80	4.57	4.19
1899-1900	216	247	3.98	4.56	4.27
1900-1	212	248	3.91	4.57	4.24
1901-2	219	243	4.03	4.48	4.26
1902-3	210	236	3.87	4.35	4.11
1903-4	180	242	3.32	4.47	3.90
1904-5	180	248	3.32	4.57	3.95
1905-6	200	246	3.69	4.54	4.12
1906-7	190	251	3.50	4.63	4.06
1907-8	200	249	3.69	4.59	4.24
1908-9	220	257	4.06	4.74	4.40

Galicia. Official Figures.

Year	Hellers per 100 kilos		Per 2,000 pound ton		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	190	210	\$3.50	\$3.87	\$3.68
1896-97	200	220	3.69	4.06	3.87
1897-98	200	220	3.69	4.06	3.87
1898-99	190	220	3.50	4.06	3.78
1899-1900	190	226	3.50	4.17	3.84
1900-1	190	210	3.50	3.87	3.69
1901-2	208	210	3.84	3.87	3.85
1902-3	191	208	3.52	3.84	3.68
1903-4	189	190	3.49	3.50	3.50
1904-5	.....	210	.....	3.87	.....
1905-6	.....	208	.....	3.83	.....
1906-7	.....	189	.....	3.49	.....
1907-8	.....	200	.....	3.69	.....
1908-9	.....	200	.....	3.69	.....

Austria below the Ems. Official Figures.

Year	Hellers per 100 kilos		Per 2,000 pound ton		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	200	230	\$3.69	\$4.24	\$3.96
1896-97	222	230	4.10	4.24	4.17
1897-98	222	230	4.10	4.24	4.17
1898-99	206	212	3.76	3.91	3.84
1899-1900	205	230	3.78	4.24	4.01
1900-1	210	230	3.87	4.24	4.05
1901-2	210	218	3.87	4.02	3.95
1902-3	202	260	3.72	4.79	4.25
1903-4	207	221	3.81	4.07	3.94
1904-5	185	225	3.41	4.15	3.78
1905-6	200	240	3.69	4.42	4.06
1906-7	200	230	3.69	4.24	3.96
1907-8	200	248	3.69	4.57	4.23
1908-9	245	250	4.52	4.61	4.56

Hungary and Bukowina. Official Figures.

Year.	Hellers per 100 kilos.		Per 2,000 pound ton.		U. S. Currency Mean of Min. & Max.
	Minimum	Maximum	Minimum	Maximum	
1895-96	160	300	\$2.95	\$5.53	\$4.14
1896-97	180	300	3.32	5.53	4.42
1897-98	180	300	3.32	5.53	4.42
1898-99	163	300	3.00	5.53	4.26
1899-1900	104	300	1.92	5.53	3.72
1900-1	.....	....	.....	.....	.....
1901-2	.....	....	.....	.....	.....
1902-3	170	300	3.13	5.53	4.33
1903-4	224	234	4.13	4.32	4.22
1904-5	.....	251	.....	4.63	.....
1905-6	255	272	4.69	5.02	4.85
1906-7	200	240	3.69	4.42	4.05
1907-8	236	245	4.35	4.52	4.43
1908-9	252	264	4.65	4.87	4.76

PRICE OF BEETS IN RUSSIA.

The drouth of 1911 which shortened the sugar crop of Europe 1,760,000 tons did not materially affect the principal beet growing sections of Russia and the average tonnage per acre, while below that of 1910, was greater than it had been in any other year subsequent to 1906, and consequently the price of beets was normal.

Prices quoted to me as being paid in the vicinity of Warsaw in November, 1911, were 27 to 30 kopeks per Russian hundred pounds (2.4 lbs. per kilo), which is equal to \$3.08 to \$3.43 per short ton.

In 1911 the French Association of Sugar Manufacturers appointed a commission to visit and investigate the Russian sugar producing districts. The report of the Association was made by one of its members, Mons. Emile Saillard, agronomic engineer, professor at the Government School of Agricultural Industries, and Director of the Laboratory of the Association of Sugar Manufacturers of France. In this report M. Saillard quotes the cost of beets at various factories at from 20 francs to 23½ francs per metric ton, or from \$3.44 to \$4.15 per 2,000 pound ton. He gives the average of three provinces as 21, 23.25 and 22.90 francs per metric ton, or \$3.68, \$4.07 and \$4.02 respectively, per 2,000 pound ton.

Die Deutsche Zuckerindustrie of February 28, 1913, gives 13 kopeks per pud of 36.113 lbs., equal to \$3.72 per short ton, as the price paid for beets by the Ssobolewka factory in the Province of Podolia; and 14 kopeks per pud, or \$3.98 as the price paid by the Schsuprunowka factory in the Province of Charkow.

The annual Report of the Russian Minister of Finance for 1911 gives \$3.90 per short ton as the average cost throughout Russia for the campaign of 1911-12.

FROM ANNUAL REPORT OF THE MINISTER
OF FINANCE.

Excerpt from report of Kapinst, Chief of Government Factory Inspection, to Senator Novitzke, Imperial Commissioner of Agriculture and aid to Wierchnjatsck Kokowzoo, Minister of Finance and President of the Imperial Cabinet, given under date of May 21, 1912.

(CAMPAIGN 1911-12).

In Russia from 707,441 dessiatines of beets there were harvested 825,731,000 puds of beets which yielded 9,510,166^{1/2} berkovetz (as given by Rathke, 1,944,677 acres, 14,931,866 short tons of beets, 2,293,115 short tons of sugar).

Beets, average price throughout Russia, 1.65 rubles per berkovetz (= \$3.90 per short ton). The lowest price is paid on the Trans-Dnieper region and in Russian Poland, where acreage to beets was about 10% of the total beet area.

The four provinces, Kieff, Podolia, Kursk and Charkow, which have an area about twice that of Bavaria and Wurttemberg, are our greatest beet growing provinces, producing about 71% of all our beets. Wolhynie, Tchernigow, Poltowa, Woronege and Tam-bow come next.

Eight million two hundred and twenty dessaitines (22,239,000 acres) of land have in recent years been given over to the peasantry and a large number of those peasants have caught the "sugar beet fever" and are planting a portion of their holdings to beets.

The above mentioned lands (22,239,000 acres) formerly belonged to the Imperial Family, the Government and to large landowners.

It is surprising to note that Russia, notwithstanding its large stock of sugar, still is continuing to increase the area of beet cultivation. It results from the fact that the quantity of sugar each factory is licensed to sell in the home market would be reduced by law if its output of sugar were to decrease in comparison with factories placed side by side (factories of like capacity).

Factories, therefore, are interested in increasing their production, so as not to see their home market sales diminished. This peculiarity in the Russian law leads us to produce more beets than we need, whether we make money on our foreign sales or not, as the factories expect to recoup themselves on their home sales when the relation between the prices paid at home and those paid abroad are regulated.

PRICE OF BEETS IN FRANCE.

From the Bulletin de Statistique, issued by the French Minister of Finance.

Campaign Year.	Francs per 1,000 Kilos.	Equivalent in U. S. Currency per 2,000 lb. Ton.
1892-3	26.98	\$4.71
1893-4	28.20	4.94
1894-5	25.97	4.53
1895-6	26.43	4.63
1896-7	24.30	4.26
1897-8	25.97	4.53
1898-9	30.24	5.29
1899-1900	30.06	5.22
1900-01	29.71	5.15
1901-2	25.45	4.45
		Average for 10 yrs. \$4.77
1902-3	23.01	4.03
1903-4	22.39	3.91
1904-5	22.23	3.89
1905-6	24.61	4.30
1906-7	21.78	3.79
1907-8	22.71	3.98
1908-9	23.90	4.18
1909-10	24.37	4.26
1910-11	26.52	4.65
1911-12	28.61	5.01
		Average for 10 yrs. \$4.20

PRICE OF BEETS IN HOLLAND.

The following official figures are from the Gemiddelte Marktprijzen von Landbouwproducten Koninkrijk der Nederlanden Rijk in Europa. Centraal Bureau voor de Statistick.

Official Figures, Average Cost of all Beets.

Year	Florins		Dollars
	Per 100 kg.	Per 2,000 lb. Ton	Per 2,000 lb. Ton
1898	1.00	9.09	\$3.65
1899	1.00	9.09	3.65
1900	0.915	8.61	3.46
1901	0.955	8.68	3.49
1902	0.890	8.09	3.25
1903	0.970	8.82	3.64
1904	1.075	9.77	3.92
1905	1.200	10.91	4.38
1906	1.00	9.09	3.65
1907	1.045	9.50	3.82
1908	1.20	10.91	4.38
1909	1.20	10.91	4.38
1910	1.25	11.36	4.56

As stated elsewhere, the Dutch and German raw sugar associations have fixed the price of beets for the campaign 1913-14, delivered at the factory gates, as follows:

Dist. 1 and 2, 12	Florens per metric ton (equals \$4.38 per short ton)
" 3, 11	" " " (" 4.01 " " "
" 4, 12.70	" " " (" 4.63 " " "
	(Average 4.34 " " "

COST OF FARM LABOR IN THE BEET FIELDS OF THE UNITED STATES AND IN EUROPE.

The U. S. Department of Agriculture recently issued a bulletin on the cost of farm labor in 1912, in which it was stated:

"Wages now, compared with the average of wages during the eighties, are about 53 per cent higher; compared with the low year of 1894 wages now are about 65 per cent higher. The current average rate of farm wages in the United States, when board is included, is, by the month, \$20.81; by the day, other than harvest, \$1.14; at harvest, \$1.54. When board is not included the rate is, by the month, \$29.58; by the day, other than harvest, \$1.47; by the day, at harvest, \$1.87."

An analysis of the labor figures as given in the March Crop Reporter of the Department shows that the average wage of day laborers on the farms in the 16 sugar beet States in 1912 was \$2.45 at harvest time and \$1.95 at other seasons of the year. From 76 direct reports received from the various beet growing sections, I found that the average daily wage in the beet fields was \$2.21, the average daily earnings of piece workers, \$3.25.

A comparison of these wages with the wages paid in the beet fields of Europe is illuminating.

The wage rate for agricultural laborers in Poland is 26.2 cents per day for men, and 20.6 cents for women, while the German wage rate is the highest to be found in the three great European beet sugar producing countries. Due to the introduction of sugar beets and the other root crops which followed and were introduced in the rotation, the acreage yield of cereal crops in Germany has been more than doubled and instead of assisting emigration because of inability to feed a population of 30,000,000

people, Germany to-day with a population of 65,000,000 people annually imports 800,000 seasonal workers to help till her fields and work in her shops.

Sixty-seven per cent of these workers come from certain provinces of Russia and Austria, the other two great sugar producing countries, attracted by the higher wage which prevails in the German Empire.

Due to a semi-official immigration bureau and to strict passport regulations which prevent an emigrant from living in any portion of the German Empire save the particular place for which he or she is booked, the wage is fixed and regulated to a nicety. Of late, certain districts of other countries which need workers have been bidding against Germany.

The Director of the German Labor Bureau gives the following as the standard wage when all allowances have been converted into money :

For Men.

Germany	1	Mark	74	Pfennigs	per day	(41.4 cents U. S.)
Denmark	1	"	90	"	"	(45.2 cents U. S.)
Prague	1	"	73	"	"	(41.1 cents U. S.)
Vienna	1	"	73	"	"	(41.1 cents U. S.)
Crakow	1	"	77	"	"	(42.1 cents U. S.)

For Women.

Germany	1	Mark	51	Pfennigs	per day	(36.0 cents U. S.)
Denmark	1	"	49	"	"	(35.4 cents U. S.)
Prague	1	"	52	"	"	(36.1 cents U. S.)
Vienna	1	"	55	"	"	(36.9 cents U. S.)
Crakow	1	"	60	"	"	(38.0 cents U. S.)

The Director remarks, "these figures show that our European competitors are trying to dislodge us from the field" and in order to save the day for Germany, he earnestly pleads, "we ought to grant an increase in wages of say 3 pfennigs per day for men ($\frac{71}{100}$ of one cent), and 2 pfennigs ($\frac{48}{100}$ of one cent) for women." He says, "I believe we ought to grant this increase in wages, as we can not get around it, and it would not be too heavy a burden for our agriculturists to pay." The question of this pitiful increase of less than three-quarters of one cent per day has assumed national importance in Germany, where, before it yet is light enough to see distinctly, farm laborers, like ghosts, flit by to their work, later slackening 30 minutes for breakfast, 60 to 90 minutes

for dinner and 30 minutes for the "vesper meal," after which they work until darkness comes on at 9 to 10 o'clock in that northern climate, and all for 41 cents per day. In the beet fields, these sturdy laborers are the most expert of any to be found. So superior are continental laborers in this work that last year the new beet sugar factory erected at Cantley, England, imported continental laborers to take the place of native farm laborers whom they were paying 2 shillings 6 pence (60 cents per day). After paying the Europeans much higher wages than they paid to Englishmen, they found that they still had saved \$10.00 per acre by the operation.

When hundreds of thousands of seasoned, skilled agricultural workmen are glad of the chance to migrate and toil from sun-up to sun-down for a week in the fields of Europe for the same wage an American farmer pays for one day's labor in the United States, it is not surprising that the American farmer needs and asks for protection.

(Excerpt from *Blätter für Zuckerrübenbau*, December 31, 1912, page 387.)

CONDITION OF THE FOREIGN LABOR MARKET.

By FREIHERR VON BUSCHE KESSEL,

Director of the German Labor Bureau, Berlin.

In considering the business year, regarding the development which has occurred in the German labor market, we find that in the spring of the year we had an ample supply of it, especially from Russia, but even at Easter, labor became scarce, the supply not entirely meeting the demand (during summer and fall) made by industrial and agricultural centers. Notwithstanding the high commission offered to labor agencies the efforts made to bring foreign laborers in considerable numbers to Germany, were fruitless. This was due to bad weather at harvest time here and abroad, which lengthened the period of harvesting. Consequently, a great number of farm hands who would have come to Germany for work were unavoidably detained in their own country.

Although we succeeded in procuring a good supply of labor for spring work, as stated above, during the summer and after Easter the supply did not correspond with the demand. If we did get enough laborers to help us out until the latter time, we owe it to Russia, for she sent us far more men than in the previous year, and there was not only a relative, but an absolute decrease in this respect from Galicia.

If you follow my figures in this article carefully, you will find

that Galicia can no longer be looked upon as a favorable recruiting ground as immigration from that quarter is gradually diminishing.

Now as to the ensuing year: We must expect an increased demand for foreign labor, particularly as related to our industries, as we are still on the upward curve in industrial activity. In looking over contracts and reports of important financial institutions and of large industrial establishments, we find everywhere that orders are abundant, the execution of which will last well into the summer and it will require a large force of workmen to execute these orders. Transportation reports from the railways and other signs of the times point in the same direction.

The Balkan war (if limited to the powers warring at present) will scarcely affect our industrial development. But if a world war breaks out, the conditions would be different. The farmer would not worry about lack of workmen the factory needs, but immigration for the benefit of either industry or agriculture would cease. In such a case we have no means of finding a remedy. However, it would be a greater calamity for Germany if, without her men going to fight, Austria and Russia were to mobilize and keep at home the men who otherwise would emigrate.

Under normal conditions we shall require a large number of immigrants to satisfy the needs of our flourishing industries. The following tables show how many workmen we procured from abroad and the proportion that were engaged in our industries:

1909.	Total of workmen	643,000
	In Agriculture 375,000 = 58.3 %	
	In Industries 268,000 = 41.7 %	
1910-11.	Total of immigrants	696,000
	In Agriculture 388,000 = 55.7 %	
	In Industries 308,000 = 44.3 %	
1911-12.	Total of immigrants	729,000
	In Agriculture 397,000 = 55 %	
	In Industries 332,000 = 45½ %	

Although we had 33,000 more immigrants this year than last, yet 24,000 went to work in industrial establishments and only 9,000 on farms. Summing up the foreign labor supply, the proportion of industrial workers has recently increased much more rapidly than that of agricultural laborers.

On account of the rising curve in the extension of our intensive agricultural methods, we must look to foreign countries next Spring for an increase in our demand for agricultural laborers, also because the preparatory work on the farms has been delayed in Russia owing to unfavorable weather conditions. This will delay the usual contingent coming from there to help us in our work.

A considerable number of our agriculturists in different parts of Germany are behind in their farm work and they will have to apply intensive methods in order to make up for lost time. This will absolutely compel them to employ (this Spring, 1913), an

increased number of foreign laborers far in excess of the number employed last season. Our Bureau will be kept exceedingly busy in consequence of this, and we are apprehensive lest the demand shall be greater than the meager supply we will have to offer. Last year's bad harvests in Russia forced a vast number of laborers to come to us for work, who otherwise would not have come. However, as Russia, this year, had a good harvest, the incentive on the part of many to emigrate does not exist. We will be curtailed in this direction and fears are entertained that the decrease in immigration from Galicia will further hamper us in the way of a sufficient supply of workers.

Now we come to the Poles and Ruthenians, who make up a large quota of our foreign laborers and we find that Galicia proper has given us only 114,000 farm laborers in 1909-10; in 1910-11 only 109,000; and last year only 97,000, a minus of 17,000 as compared with two years ago; and a minus of 12,000 as compared with the previous year. These figures are sufficiently eloquent without my having further to comment on them.

Of course, Russia has helped us hitherto by sending us in

1909-10	242,000	agricultural laborers.
1910-11	238,000	" "
1911-12	262,000	" "

However, it is a serious matter for us Germans to have to depend more and more on "Russia" for our supply of agricultural laborers. I put emphasis on the word "Russia" as there the police not only pry into the political conduct of the workmen, but also have their say in rural economics. In the matter of migration, the will of the police is supreme. In order to cross the frontier, every foot of which is closely guarded, a Russian subject must be provided with a specified permit and those permits are issued according to commercial treaties made between Russia and Germany from time to time,—and when you bear in mind that Russia is a country which largely exports agricultural products, you will then realize the gravity of the situation which confronts Germany with respect to the latter having to depend mainly on Russia for her supply of agricultural laborers.

Men who know Russian conditions in the interior, believe that she is on the eve of a new revolution and it only requires some sort of foreign complication to fan the glowing embers into a flame. China, Persia, the Balkans,—the mention of any of these three names will give us food for thought. Therefore, not to be entirely dependent on Russia for our labor supply, we must bestow our attention on Galicia. And why has the supply of laborers from Galicia decreased? Let us examine this question. First of all, we have competitors in the European labor market.

Last year we offered for men per day, 1 M. 74 (41.4 cents)
 " women " 1 M. 51 (36 cents)

or allowances converted into the same amount of money.

Denmark, at that time, made contracts paying

Men per day	1 M. 90 (45.2 cents)
Women per day	1 M. 49 (35.4 cents)
For men a plus of 16 Pfg. =	(3. 8 cents)
For women a minus of 2 Pfg. =	(0.47 cents) per day.

The National Central Bureau of Prague, which hires the largest percentage of laborers for the Bohemian landowners, offered men M. 1.73 (41.1 cents) per day, and women 1.52 M. (36.1 cents).

The great Agricultural Central Bureau in Vienna, which hires people for all Austria at M. 1.73 (41.1 cents), also offered the women M. 1.55 (36.9 cents).

The Emigration Union of Crakow, agents for "Austrian Land-owners," offered: Men, M. 1.77 (42.1 cents) and

Women, M. 1.60 (38 cents) per day, that is to say, 3 pfennigs (0.714 cents) more for men and 9 pfennigs (2.14 cents) for women.

These figures show that our European competitors are trying to dislodge us from the field. Then we must bear in mind that work in a man's own country is accompanied by many advantages; and added to that fact the workman as a rule is subjected to a greater supervision and discipline in Prussian Germany than is the case in Moravia and Bohemia, where surroundings are more congenial, and you will not be surprised to see that the laborer is inclined to prefer working there than in Germany.

If you read the newspapers, you will find therein articles written by Poles, advising laborers not to go to "Prussian Germany." Thus the Poles try to make use of any means they can to harm German agriculture by boycotting German employers of labor. One of the means also consists in publishing letters alleged to have been written to their relatives by workmen employed in Germany, in which complaints are made of the terrible treatment and sufferings entailed. Although the very exaggerated accounts bear the impress of untruth, yet we have taken the trouble with the aid of the authorities, in the locality named, to investigate these allegations, and we invariably have found that on confession of the writers of such letters, the accounts were untrue. Also that some incidents in the laborer's daily routine work were grossly misrepresented and exaggerated.

The "Polish Emigration Union" is especially active in this work and boasts in pages of its weekly paper that it will not cease to agitate until all laborers will decide to go to other countries rather than to Germany. One object of this agitation is to secure for other countries their share of the labor available and to which the Poles are more favorably inclined.

We are living in a period of a highly advanced economic development, and with the increased cost of living the world over, the price of goods materially increased, wages must of necessity rise accordingly. Therefore, Germany ought to make efforts towards bettering and strengthening her position in the field of competition, for to stand still would mean stagnation in agriculture, which

not only must compete with a foreign element, but must right here, in Germany, compete for her labor supply with industrial establishments. We must also bear in mind that Easter of 1913 will be earlier than usual; those who make up their minds to celebrate it at home will not leave their country to go abroad until after Easter; this fact is well known to all of us. Therefore, if we wish to supply our demand for 1913, we must make strenuous efforts to secure an early and abundant flow of immigration.

What must we do?

To Russian laborers who demand contracts with more cash payments and scarcely any allowance for firewood, etc., we ought to grant an increase in wages of say 3 Pfgs. per day (0.714 cents) for men and 2 Pfgs. (0.476 cents) for women. To Galician workmen who make contracts on the basis of less cash and more subsistence in lieu of cash, we ought to grant 4 Pfgs. per day for men and 4 Pfgs. (0.952 cents) for women, the increase in wages granted by our competitors.

I believe we ought to grant this increase in wages, as we can not get around it, and it would not be too heavy a burden for our agriculturists to bear. I have received a list of 44 employers of labor—of contracts made on the Russian frontier—where alone, contracts for large numbers can be made, either by employers or their Agents. This list comprises 44 farms located in different parts of Prussia and Germany.

Below I give you a comparative statement:

"We offered for men per day M. 1.96 (46.6 cents) inclusive allowance converted into a cash equivalent M. 1.45. (=34.5 cents) for women. These 44 employers give men M. 2.17 (=51.6 cents), women M. 1.59 (=37.8 cents) a plus of 21 Pfg. (4.99 cents) for men, and a plus of 14 Pfg. (3.33 cents) for women."

I recommend, therefore, in view of market conditions described, that the resolution I herewith introduce be faithfully passed, which will enable us to offer foreign workmen a higher rate of wages than those we have heretofore agreed to pay, and I request you, gentlemen, to vote favorably on this, my resolution.

EUROPEAN WAR AND THE PRICE OF SUGAR.

Owing to the drouth which visited western Europe in 1911, the wholesale price of sugar in New York rose to 7½ cents per pound, the highest figure it had reached in many years.

Due to a bountiful world crop and especially to the fact that the domestic crop of beet sugar is the largest ever produced, sugar to-day is 4 cents per pound wholesale, in New York, the lowest price recorded in years.

That the enactment of the pending tariff bill would destroy the domestic beet and cane sugar industry is conceded by all who have any knowledge of these industries, after which the United States would be dependent upon foreign countries for its sugar supply.

To what figure the price of sugar then would go in case of an European war, only can be imagined, but, considering the facts set forth in the following article, it is not unreasonable to suppose that it would rise to from 10 to 20 cents per pound.

(Translation from the German.)

(Excerpt from Die Deutsche Zuckerindustrie, February 21, 1913, page 173. Annual meeting of East German Union of Sugar Factories. By Dr. Cl. Mayer, Berlin.)

BEET CULTURE IN GERMANY AND THE GERMAN SUGAR INDUSTRY, THREATENED WITH STAGNATION IN VIEW OF THE SUPPLY OF LABOR NOT BEING EQUAL TO THE DEMAND IN FIELD AND FACTORY.

The Importance of Foreign Laborers in Relation to Rural Economics in Germany.

You are all aware of the fact that the German Sugar Industry and the beet growing agriculturists depend very largely on foreign labor to carry on their work. Dark clouds have appeared on the political horizon and our peaceful security may be threatened at any time. To use the words of the Imperial Chancellor, "A conflagration over the whole of Europe—a war involving many nations—is still within the range of possibility."

These war clouds have materially influenced the labor market and may well give us food for thought with regard to the future of the Beet Sugar Industry.

If, at a given moment, war should break out, involving Central and Eastern Europe, we must take it for granted that all wage earners now flocking to our fields from Austria and Russia will be forcibly kept at home, thereby inflicting a tremendous injury to our Sugar Beet Industry. The question is what can we do about it?

Some time ago this question was discussed in Berlin and many came to the conclusion that in case of war, during the time it lasted, our Sugar Industry would stagnate or remain entirely idle.

If such a contingency should arise, if it is thought that such a thing might happen, then it is our duty to calmly picture to ourselves the calamitous consequences of such an occurrence and to think out what sort of a remedy to apply.

The vast number of men and women that cross and recross annually our frontiers, is greater than the migration of people we read about in history, people who came, saw, conquered and settled down, but here we have hundreds of thousands who come

here to work, don't settle down, carry off over 100,000,000 marks annually, and may be, never to return.

I have brought with me colored charts, from which you will gain an idea as to the number of foreign workmen engaged in agriculture and the industries as reported by district officials and Councillors of State (of course these statistics refer to 1905, 1906, 1907 and 1908). These figures are also applicable to the present time.

Foreign Workmen in Prussia (by Occupations in Industries).

Industries.	No.	Agriculture.	Total Number.
1905	229,000	207,000	454,000
1906	369,000	236,000	605,000
1907	475,000	258,300	733,000
1908	471,000	309,000	780,000

Foreign Laborers in Prussia.

By Countries of Origin.

Industries.	No.	Per cent.	
		From	Country
1908	341,600	43.8	Austria Hungary.
	184,000	23.5	Russia.
	105,300	13.5	Italy.
	103,800	13.3	Netherlands.
	7,600	1.0	Belgium.
	37,700	4.9	Other countries.

Total No. Foreigners, 780,000

But we may safely estimate, however, that 800,000 to 850,000 people, male and female, cross our frontiers to find work here and two-thirds come from the East, that is to say, from Austrian provinces and Russia, and one-third from other States. There are Poles, Italians, Ruthenians, Dutch and Belgians, Germans from Austria-Hungary, Danes, Swedes, Norwegians and others.

More workmen are claimed by industrial establishments than are in demand for agriculture. There are certainly 310,000 if not 330,000 foreigners at work in agriculture and 450,000 to 480,000 in the industries.

I wish to point out the prejudice caused by these foreigners to our national economic life: 100,000,000 marks are carried out of Germany by these foreigners in the shape of wages—which is certainly a considerable item to the debit of our financial balance.

We must admit that through the influx of these foreigners, wages for our own working people are kept down—as the families of these foreigners live mostly in their own country, where the cost of living is not so high as it is in Germany, therefore the foreign workmen are not compelled to earn as much to provide for their families. The German working man is bound to get enough so as to satisfy the needs of his family. Besides, we have become entirely dependent on foreign countries for the supply of labor on our farms and in industrial centers. Should Russia or Austria require the help of these people at any time and prevent them from crossing the frontier or recall them from Germany—even without the chances of a war breaking out (some reason might be given at any time by their respective governments for recalling

them), this would be the greatest calamity that could befall our Central and East German agricultural districts. It would mean the ruin of numerous agricultural establishments, a tremendous shrinkage in many industrial undertakings and the loss of many millions of marks, would, in that case, follow as a matter of course.

It has been found that in many districts where foreign workmen were employed, breaches of contract between wage earners and employers were of frequent occurrence, which exercised an unfavorable influence on our native workmen as far as discipline and order were concerned.

Foreigners ought to have their papers in good order and should have documentary proofs as to their identity, their antecedents, etc. A case came to my knowledge where a Pole had a document, provided with beautiful stamps and seals which passed everywhere as his passport, until, one day, an official who could read Polish found that the passport was nothing more than a certificate given by the municipal authorities of his native village, giving the holder thereof notice that he was again permitted to milk his cow, which two years previous had been adjudged tubercular. This shows the necessity of our taking vigorous measures to see that incoming foreigners are bearers of proper passports.

For agricultural and industrial needs, we now have a perfect Official Central Hiring Administration in Berlin, which works both in the interests of employer and workman.

Most of the foreign agricultural Austrian and Russian laborers are employed by large landowners east of the river Elbe and in West Germany, mostly on estates where beet culture and intensive farming is carried on. Wage earners that are mainly to be considered in beet culture are Poles (Russian and Austrian) and Ruthenians, half of which are women.

As beet growing developed, we were obliged to employ more labor in the fields; we soon found that our native population did not supply the necessary and increasing demand. The so-called "Sachsenwälder" (wandering natives of Saxony) that annually crowded into the beet districts, for a time supplied the necessary labor material, but beet culture increased rapidly and foreign countries had to supply the demand for labor. Of course, we must attribute this partly to the fact that between 1850 to 1900, about 5,000,000 emigrants left for America, never to return. Then in 1890 and since, came the steady flight of people from the rural districts to the city, causing an annual loss of 200,000 people to our agricultural districts in favor of industrial centers, the growth of which assumes, year after year, extraordinary proportions.

Agriculturists and landowners have been blamed for calling in foreigners in order to keep the wages of our native workers down to as low a level as possible. However, we know that this is not the case, as we were simply compelled to get labor from abroad, our native supply not corresponding with the demand. Large estates engaged in beet culture have been entirely dependent on the influx of foreigners for their supply of labor.

The foreign element who has come to us for work, has been

largely unskilled labor, the essential being muscle and endurance. Many managers of industrial plants look upon the foreigner as an undesirable element, yet they are forced, for want of native help, to employ them. During the busy season there is an abundance of foreign labor from which recruits can be obtained, and when the season slacks down, this particular class is gotten rid of before any of the native workmen are discharged.

Of the foreigners employed, the Poles are subject to Government regulation; they are compelled to leave Germany on the 20th of December each year, and are also obliged to stay in their own country until February 1st.

As a rule, foreign workmen constitute a sort of contingency buffer, a safety valve for our native working population; for Germans are getting employment when work is slack, whilst foreigners are discharged ere the Germans get notice to quit.

It certainly is to be deplored that foreign workmen should play such an important part in our national economics and that we have to be dependent on the good will of foreign countries for our labor supply. It is with deep regret that conditions are such, especially so with regard to our agriculture, for other industries may incur some temporary losses by reason of an insufficient number of workers, but in the case of agriculture, such losses would be permanent, if, for instance, no workmen were available for harvesting our crops at the proper time.

RUSSIA THE GREAT SUGAR PRODUCING NATION OF THE FUTURE.

For many years the sugar world has watched and feared the growth of the sugar industry in Cuba, in Java and in Germany. The Cuban sugar industry is dreaded because of the ideal cane sugar conditions which exist in that island, the sugar areas of which are sufficient to supply the world with sugar, the only limitation being the supply of labor. The Javan sugar industry is dreaded not only because of the favorable natural conditions which the island offers, but because of the fact that it has a population of 30,000,000 and they toil in the cane fields for a wage of 8 cents per day. The German sugar industry is feared because of the marvelously superior cultural methods which are applied to the tilling of the soil and because of the fostering care which the German government extends to the industry.

But of late Germany and other European sugar men have awakened to a new Richmond who has appeared in

the sugar world and threatens to distance all other countries in the production of sugar. I refer to Russia, which, both in percentage and in tons, has increased her sugar production far more rapidly than has any other great sugar producing country in the world, as will be seen from the following :

*Sugar Production of Russia, Germany, Cuba and Java, 1892-93
and 1910-11.*

(In short tons of 2,000 lbs.)

	Production 1892-93.	Production 1910-11.	Net Increase.	Percentage of Increase.
Russia	445,456	2,324,530	1,879,074	421.8
Germany	1,356,749	2,854,847	1,498,098	110.4
Cuba	1,118,743	1,661,465	542,722	48.5
Java	470,593	1,376,592	905,999	192.5

A few years ago, Russia stood fourth in the production of beet sugar. She now stands first in the area devoted to sugar beets and second only to Germany in her output of sugar. To cultivate her fields, the German Empire depends largely upon the 800,000 seasonal workers which annually are imported, while Russian Europe has a population of 131,000,000 people and not only are they industrious, but they toil for a lower wage than do any other people in Europe. Train loads of Russian women and girls annually migrate to Germany, Sweden and Denmark, to work in the fields from five and six o'clock in the morning to ten and eleven o'clock at night for a wage of 41½ cents (U. S.) per day, out of which they feed themselves. They go because such wages are nearly double what they are at home and because they are unable to secure employment at home even at the lower wage. But at home there are as good or better soils than in the countries to which they migrate and with the new light which has come to Russia, she means that the profits derived from this labor shall go into Russian, instead of foreign, pockets. It requires a passport to leave, as well as to enter, Russia, and Russia will experience no more difficulty in regulating emigration than in regulating immigration, once the means of livelihood has been provided. The present average field wage in Polish Russia and in

Galicia is but 10 cents per day for children, 17½ cents for women and 24.9 cents for men. It is with industrious laborers working at such a wage and properly directed that the sugar world has to compete.

The soil in both the Polish and the Kiev districts is fertile and strong and the climate is superior to that of the most of Europe for agriculture. Although the natural agricultural conditions of Russia are superior to those to be found elsewhere in Europe, her crop yields are the lowest. In fact Russia has the distinction of being the only great agricultural country whose yields per acre are less than they are in the United States, and while the low yield in Russia is due somewhat to the poverty of her people, the principal cause is the same as in the United States, absence of alternation of root crops with cereals.

Until a few years ago, the fact that the culture of sugar beets in rotation with other crops greatly increased the yield of the latter, was not appreciated in Russia, but now that it is, every effort is being made to increase their beet plantings. When I was in Warsaw a year ago, three large beet-sugar machinery concerns were running on full time, as were two others at Kiev. One of the projectors of a new beet-sugar factory to be erected between Warsaw and Krakau informed me that so anxious were the farmers to grow beets that before the contract was let for the machinery or a brick laid for the buildings, they had all the beet acreage signed up that they could handle, at a fraction under the equivalent of \$3.20 per 2,000-pound ton, which, on the average extraction obtained in Russia (316.98 lbs. of raw sugar per ton of beets), will give them raw sugar in the beet at a cost of \$1.01 per 100 pounds.

The Minister of Agriculture of Russia maintains an Institute for agricultural research work which is subsidized by the Russian Association of Sugar Manufacturers, and due to its efforts, has scattered throughout Russia a number of experiment stations in beet-sugar districts. This Institute is presided over by Dr. Frankfourth, one of their greatest agriculturists. Thanks to this Institute, in studying all the questions relating to rotation, fertilizing, seed, tillage, etc., vast progress has been made in Russian beet culture.

In common with the United States, Russia's low cereal crop yields present to her statesmen the strongest incentive to foster the culture of sugar beets regardless of cost to her treasury, and her vast and underpaid population, coupled with soil and climatic advantages which are inferior to none, present conditions which can not be ignored when considering the future prospects of the sugar industry elsewhere in the world.

After making an extended tour of investigation through the sugar-beet districts of Russia, Mons. Emile Saillard, Chief of the sugar laboratories of the French Syndicate of Sugar Manufacturers, said in his report :

Russia's future sugar industry is assured. She can increase her production not only by introducing improved methods of culture but also by increasing her sugar-beet area. In the natural course of events, without carrying on a very extensive culture she is liable to become the greatest sugar producer of not only Europe but of the whole world.

To summarize Russian conditions, they have :

The richest of soils.

A limitless area.

A population of 131,000,000 people.

The lowest wage rate in Europe.

A prohibitive import duty of \$8.56 per 100 pounds.

A Government bounty on sugar exports.

The domestic price of sugar fixed by law, which on a certain date as mentioned by Koenig, enabled them to make an export price of \$2.45 per hundred for export sugar, while maintaining a price of \$7.18 per hundred on sugar for the domestic consumption of 131,000,000 people.

Low yields of cereal crops.

Discovery of the fact that the yield of cereal crops can be doubled and quadrupled by rotating them with sugar beets.

A law whereby Government aid is assured and facilities granted for the extension of beet culture and the building of new factories.

It is not overstating the truth to say that Russia can raise as rich beets as can Germany and as many tons per acre. She has billions of dollars a year to gain in the increased yield of other crops by extending her beet acreage, her thinking and scientific men are alive to

these possibilities and her government officials are extending every possible aid to her sugar manufacturers.

None are more far-seeing than are the Germans, and they fear Russian competition far more than we fear that of Germany.

Should the United States duty on sugar be greatly reduced or altogether removed, thus destroying the home sugar industry, it is Russia and not Germany which would run Cuba the closest race for the extra market thus opened up.

Early last year Privy Counselor Gustav Koenig, President of the German Beet-Sugar Association, sounded a note of warning to German sugar manufacturers, when addressing the Association. The following is a translation of Koenig's remarks :

RUSSIAN SUGAR.

Excerpt from *Die Deutsche Zuckerindustrie*, January 26, and March 1, 1912.

At a general meeting of the German Beet-Sugar Industry held in Berlin, Imperial Councillor Koenig, who is also the President of the organization, made the following remarks:

We ought to do everything in our power to limit Russia in her efforts to increase her export trade before 1918. Russia is planning to rid herself of the vast stocks of sugar she has on hand, not merely for the purpose of enhancing her position, but primarily to fill her coffers with millions of roubles. She is very anxious to strengthen her position and increase her production from year to year, which means, of course, a large increase in her exports to non-convention countries.

Should we, the German beet-growers and German sugar trade, permit this? If so, Russia would be able to capture the markets of the world, and ere we are aware, crush our export trade. We must therefore take heed and do nothing which might in any way help to advance Russia's position; especially is this true with regard to preventing her from increasing her production, for, according to the agreement she has with the Brussels Convention she can only expand in exports outside of convention countries in competition with us. Sugar, as you all know, is a world commodity, and Russia will make every effort to compete with us in all directions of the compass. We must not second Russia in her desire to further her exports and rid herself of her surplus production, as the German Sugar Industry and beet-growers are already feeling the effects which have been produced by her anxiety to get all the export trade she can gobble.

Let us look into the future and see what harm will come to us on the part of Russian competition. When I say us, I mean the German Sugar Industry, the beet-growers, and commerce generally. Gentlemen, the three factors are of one mind, not to help in strengthening the capacity of Russia's output.

Gentlemen, I have faith in the German government; faith in the German law-givers, that they will do their duty and give us, regardless of Convention agreements, a duty which will give the German beet-growers and sugar factories such protection as to effectually keep any and all foreign sugar out of the country.

If we can carry on the fight of competition in non-convention countries and our hands be not tied by the Brussels Convention as far as markets of the world are concerned, we do not fear the oncoming struggle with Russia in her desire to gain supremacy. But to sharpen her sword so that she would be able to dislodge us from the sugar markets of the world, that would be asking too much.

What the German beet-sugar people want is not to have their hands tied too much by the Brussels Convention, but to be able to carry on a war of competition with Russia, whose sugar exports in the near future to non-convention countries we have to fear.

After Russia will have exported all that the Convention allows her; after having sold to England all that country will take, and having gradually increased her production, she will be confronted with the fact that she has large stocks on hand and does not know how to rid herself of them. Russia's sugar stocks are growing tower-like, and there is a danger that Germany will have to suffer from the stones that will fly to all points of the compass.

Russia's acreage since 1904-5 has increased from 478,000 hectares (1,181,138 acres) to 787,000 hectares (1,944,677 acres) in 1912, and her production of raw sugar has increased from 591,000 (in 1894) to 2,080,000 tons. The Government is doing everything possible to further and encourage beet culture, and on March 4th of this year the Minister of Finance brought in a bill which has since been enacted into law, whereby government aid is assured and facilities granted for the extension of beet culture and the building of new factories. The Cologne Gazette of February 26th, 1912, says:

"It is Germany's duty to put on her armor and be ready for energetic competition in the world's sugar markets."

If you picture to yourself that from 591,000 tons in 1894, Russian sugar production has risen to 2,080,000 tons in 1911-12, we have no guarantee as to the limit that her production may reach. We will have a war of competition on our hands and we will have to fight that war under unfavorable conditions.

Mr. Secretary of the Treasury and gentlemen:

I have here a report, informing me that large quantities of Russian sugar are now stored at Vladivostock, Port Said, Le Havre and Hamburg, and we must be on the lookout that this sugar does not reach the European markets—in which the eleven (11) convention countries are interested. The steamers *Vladimir*, *Moughieff*, *Mars* and *Cerena*, each with a wagon load of 200 tons, are now on the way to increase the stocks of Russian sugar at above points.

Our sugar factories and allied industries give occupation to 270,000 workmen in addition to field laborers engaged in beet culture.

Now let me illustrate as to how we are likely to be inferior to Russia in competing in the western world (United States). Odessa, not long ago, quoted 5.08 roubles per pud for (consumption inland) sugar and

quoted export sugar at 1.73 roubles; that is to say, 100 Kg. sugar consumed in Russia was quoted at Frs. 82 (\$7.18 per 100 lbs.); 100 Kgs. for export Frs. 28 (\$2.45 per 100 lbs.). In other words, *considering the high prices obtained in Russia from her 150,000,000 people for sugar consumed in Russia, the factories were able to throw all they did not consume at the heads of foreign buyers at a great loss—that loss being only apparent—for their average profit was considerable.* Count Kheven-hueller of Austria, has calculated that in reality the Russian law gives Russian sugar a bounty of 17 francs 60 per 100 Kilograms (\$1.54 per 100 lbs.), and Count von Schwerin calculated that Russia is now able to sell her sugar (100 Kgs.) about 12 francs (\$1.05 per 100 lbs.) cheaper abroad than the price her native consumers have to pay.

Mr. Secretary, if you have the interests of the German Sugar Industry at heart, then co-operate with us in enabling us to manufacture sugar cheaply, so that we may succeed in competing with Russia successfully in the markets of the world.

You are aware of the fact that the United States of America has granted the Philippine Islands duty free markets for 300,000 tons of sugar; this quantity, however, has not been reached, and it will be a long time before it does reach that figure.

This preferential favor is due to the President of the United States, Mr. Taft, who, whilst Secretary of War, took an interest in Philippine affairs in general.

The Beet Sugar Industry of the United States did not like this and in this respect their interests are identical with those of the beet sugar industries of the world—and it is not likely that within the next fifteen years the Philippines will be able to supply more than 180,000 to 200,000 tons per annum. It would be very unpleasant for us if the Philippines would exceed this quantity, *but still more unpleasant for the German sugar people if the North American Beet Sugar Industry should reach a higher development than it has now.*

You all know that this campaign has a surplus of about 1,900,000 tons and most of that surplus is in Russia, or in various ports, in bond, for Russian account, speculators and others, *and her exports are liable to increase to the East and to the American continent and Canada*, and we also know that the English invisible stocks are tremendously large.

The Russian government in consequence of having a large surplus has reduced the price limit by 5 kopecks per 110 pounds (\$1.20 per short ton or about 6 cents per hundred pounds), so as to stimulate home consumption.

We must also note whether the Austrians will export sugar in the raw, as Austria exports annually as much sugar as she consumes.

In the name of the Association I have to thank the first President, His Excellency von Gunther, for having honored us with his presence at this meeting.

COST OF PRODUCING SUGAR IN CUBA.

Deputy Consul General H. P. Starrett of Habana has supplied the *Daily Consular and Trade Reports* with information concerning the present cost of producing sugar in Cuba. In his report published June 10, 1912, he gave the average cost at the factory in Oriente Province as 1.6 cents per pound. In his report published April 8, 1913, he gives 1.25 cents as the average cost in a modern mill, a cost of "well over 2 cents a pound" in the poorest mills, and an average cost throughout the island of 1.75 cents at the mill and 1.85 cents laid down at the seaboard.

The correspondent of the *Deutsche Zuckerindustrie* under date of January 31, 1913, states that American factories in Cuba calculate the cost at 1.5 per pound, which he says is 1 pfennig ($\frac{1}{4}\%$) per pound less than he calculates it, but he figures that some mills are producing at 1.5 cents per pound.

Excerpt from the *Daily Consular and Trade Reports*, June 10, 1912.

THE CUBAN SUGAR INDUSTRY.

(From Deputy Consul General H. P. Starrett, Habana.)

The treaty of reciprocity between the United States and the Republic of Cuba, which was negotiated in 1902, allowed a preference of 20 per cent in the duty on Cuban sugar entering the United States. Since that date Cuba has entered upon a period of development that has exceeded the predictions of the most optimistic. Vast new areas of land have been brought under cultivation, new mills have been erected, old mills have been remodeled and improved, and projects are on foot for many additional mills to be built in the near future. So great has been this recent development that it can safely be said that if the present activity continues Cuba will be in a fair way of becoming the largest producer of sugar in the world.

The relations between Cuba and the United States have been so close during the last few years that it is interesting to observe to just what extent American capital has invested in the Cuban sugar industry. A careful estimate of this investment in mills, lands, railroads, and other equipment devoted exclusively to the industry, but not including mortgages, gives a total of \$54,000,000. In this estimate, however, are included a few companies which were organized in the United States and hold charters granted by different States, but whose stock is owned by persons other than Americans. Their investment amounts to a very small percentage of the whole. The distribution of this total investment through the

different Provinces of the island is as follows: Pinar del Rio, \$750,000; Habana, \$3,000,000; Matanzas, \$5,750,000; Santa Clara, \$14,500,000; Camaguey, \$4,700,000; and in Oriente, \$25,300,000.

Extent of American Interests.

There are in the island at the present time 173 active mills, of which 34 are wholly American owned and 2 partly controlled by American capital. Another interesting fact is that American-owned mills produce nearly 35 per cent of the total sugar output of Cuba. * * *

Excerpt from the Daily Consular and Trade Reports, April 8, 1913.

COST OF PRODUCING CUBAN CANE SUGAR.

(Deputy Consul General Henry P. Starrett, Habana.)

In discussing the cost of production of Cuban cane sugar it may be stated at the outset that no statement as to such costs can be absolutely correct as applied to individual mills, differences in cost being as wide among the different mills as for any staple article where producing conditions differ with locality, cost of raw material, labor wage, efficiency of machinery, and character of transportation facilities.

Low Cost in Modern Mills.

In the modern sugar mill in which machinery of the highest efficiency has been installed, where the location is on or near a good harbor and docking facilities are available, where the mill company owns and operates its own lands and railroad, and which has as its manager a man who has real executive ability coupled with long sugar experience, sugar can be and is produced for 1.25 cents a pound, this representing the total cost of the product from time of planting the cane to placing the finished product alongside the ship, and the proportional charge for general and administrative expense.

High Cost in the Older Mills.

However, the other extreme is reached in the old mills, which are inefficient in themselves and are located at interior points where they are compelled to pay high freight rates on their sugar product and oftentimes an abnormal price for their cane. Many of the older mills do not own or operate the fields from which their cane is produced, whereas other mills own the land and allow "Colonos" or cane farmers to operate the fields. In the first instance some of these mills pay as high as 7 arrobas (arroba=25.3664 pounds) of sugar for each 100 arrobas of cane delivered to the mill or its railroad, while in the latter case, where the mill owns the land, the "colono" receives only from 4 to 5 arrobas of sugar for each 100 arrobas of cane. Under the conditions which obtain with the mills of the first instance the maximum of disadvantage is operating against the possible profits of the mill, and there is no doubt about the fact that many of the mills of this type in Cuba produce sugar at a total cost which is well

over 2 cents a pound and close to the zone of "no profits." The production of such mills, however, probably represents a small percentage of the total production of the island. * * *

Total Average Cost of Sugar at the Mill.

The two general items, cost of cane and cost of manufacture, are therefore:

Producing and cultivating 90,000 tons of cane, at 90 cents per ton	\$81,000
Cutting and loading same on carts, at 70 cents per ton	63,000
Hauling from fields and loading on railroad cars, at 40 cents per ton	36,000
Railroad cost for hauling to mill, at 30 cents per ton	27,000
Mill cost of manufacture, at 75 cents per ton	67,000

Total \$274,500

To this amount must be added the "general expenses" amounting to \$104,250, making a total of \$378,750, which figure represents the cost of producing 9,651 tons of raw sugar. Each ton being of 2,240 pounds, the production in pounds is therefore 21,618,240, and the cost per pound is 1.75 cents.

Total Average Cost at Seaboard.

This of course represents the cost at the mill and does not take into account the cost of transporting the product from the mill to the shipping port, for this varies so widely that no fair estimate could be given, some mills being so situated that they are compelled to pay as high as 60 cents a bag [325 pounds] for railroad freight from the mill to the seaboard, while for others which are located on the coast and own their own docking facilities and railroad, the shipping cost is low, being not more than 5 cents a bag. As a rough estimate it can be stated, however, that the average transportation cost from mill to seaport probably does not exceed 32 cents per bag, or an equivalent per pound of 0.1 cent. This would make the total average cost of sugar at seaboard 1.85 cents per pound.

In conclusion it should be reiterated that these figures are only average results, and that this average will be higher or lower according to the season and conditions—that is, whether a large or a small crop of cane is harvested; high or low percentage of sugar content in the cane; and the rise or fall in the wage scale.

* * *

Excerpt from *Die Deutsche Zuckerindustrie*, January 31, 1913.

WHAT IS THE COST OF PRODUCTION OF 1 POUND OF CANE SUGAR IN CUBA.

Ten factories (situated in different districts) show the cost of production to be at Ports (net price in Port not f. o. b.) of Cuba including cane, wages, bags, taxes and all operating expenses *without any profit whatsoever* 2.04 centavos Spanish Gold per pound or 500 grams $\frac{1}{2}$ kilo=7.96 pfennigs (equal to 1.55 cents) per pound avoirdupois.

American factories in Cuba calculate, with a 10% Rendement (96° Pol.) sugar as being produced at 1.5 cents per American pound=6.95 pfennig a metric pound—but this is 1 pfennig per pound less than my calculations run to, but we must bear in mind that American factories equipped with modern machinery and with a large capital at their disposal, buy their coal, bags, etc. wholesale, pay no interest on loans and with other economic advantages over Spanish and Cuban factories, may, under favorable conditions, reduce their cost of production by one pfennig per pound ($\frac{1}{4}$ cent per pound). * * *

STATISTICAL TABLES.

PRODUCTION OF BEET SUGAR IN THE UNITED STATES AND IN THE PRINCIPAL SUGAR PRODUCING COUNTRIES OF EUROPE.

1886 to 1912.

COMPILED BY TRUMAN G. PALMER.

BASIC FIGURES FOR UNITED STATES: INTERNATIONAL SUGAR SITUATION, BULLETIN NO. 30, DEPT. AGRICULTURE, 1904, P. 94; BULLETIN NO. 260, DEPT. AGRICULTURE, 1912, P. 70, AND FIGURES FURNISHED BY BUREAU OF STATISTICS, DEPT. AGRICULTURE, MARCH 17, 1913. FOR DENMARK, SPAIN AND ITALY, FROM FIGURES OF FRED SACHS, BRUSSELS, BELGIUM. FOR GERMANY, RUSSIA, AUSTRIA-HUNGARY, FRANCE, BELGIUM, NETHERLANDS AND SWEDEN, FROM RATHKE'S JAHRBUCH.

NOTE.—The official figures of the German Statistical Office do not include sugar extracted in molasses plants, hence differ slightly from Rathke's figures which correspond with those of Dureau, the Austro-Hungarian Sugar Syndicate and the Deutsche Zuckerindustrie. No notice is taken of the comparatively small quantities of beets which are shipped across the frontiers.

European figures for 1911-12 are "preliminary figures."

All sugar expressed in terms of raw, and stated in tons of 2,000 pounds.

The sugar product of Europe consists largely of raw sugar which is shipped to domestic refineries or is exported in its raw state, and such white sugar as Europe produces for direct consumption is converted to terms of raw on the basis of 100 pounds of raw to 90 pounds of refined.

The United States beet sugar factories produce only white refined sugar for direct consumption, and to facilitate comparison with the foreign figures, I have converted the American product to terms of raw sugar on the basis of 100 pounds of raw to 90 pounds of refined.

I.—ACRES OF BEETS HARVESTED.

Years.	United States.	Germany	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	...	684,192	731,460	...	379,323	...	...	...	...	...	...
1887-88	...	651,815	658,291	...	398,572	...	...	...	...	...	...
1888-89	...	691,897	663,587	...	425,506	111,195	117,866	...	...	...	...
1889-90	...	752,258	655,205	673,841	509,520	117,866	129,727	...	...	...	...
1890-91	...	824,824	767,601	737,593	547,573	129,727	130,963	...	...	...	...
1891-92	7,155	861,583	758,955	810,240	550,785	121,326	141,341	...	...	...	...
1892-93	13,128	869,829	713,328	817,159	537,689	141,341	52,706	...	...	...	...
1893-94	19,645	954,994	805,281	865,838	543,644	174,931	109,680	46,079	...	...	...
1894-95	19,538	1,090,800	825,778	929,491	596,805	144,770	116,108	70,077	...	...	...
1895-96	22,948	930,749	852,598	713,871	505,858	136,349	88,434	58,476	...	...	...
1896-97	57,239	1,049,880	877,167	864,108	608,370	118,506	118,506	71,659	31,915	...	...
1897-98	41,272	1,080,256	992,739	748,465	570,934	129,233	129,233	59,551	36,324	...	...
1898-99	37,400	1,053,777	1,085,391	766,257	586,044	132,087	110,107	56,338	34,594	...	...
1899-00	135,305	1,054,454	1,197,150	804,063	656,505	148,235	109,702	65,278	34,594	...	...
1900-01	132,000	1,106,034	1,309,911	839,151	747,146	177,195	116,334	71,525	34,594	...	...
1901-02	175,083	1,182,988	1,350,142	896,231	772,101	171,981	118,506	71,659	35,830	...	...
1902-03	216,400	1,056,708	1,430,370	751,184	614,500	129,233	76,687	59,602	67,705	34,594	...
1903-04	242,576	1,030,103	1,322,842	763,539	585,315	146,036	99,602	88,600	59,672	34,594	...
1904-05	197,784	1,029,700	1,161,614	793,191	503,520	113,097	88,600	68,570	37,559	80,018	97,049
1905-06	307,364	1,165,674	1,300,250	917,976	682,813	176,404	119,794	108,909	77,836	38,053	82,408
1906-07	376,074	1,104,446	1,404,879	845,082	511,917	149,001	113,517	77,095	37,065	98,099	93,784
1907-08	370,984	1,112,024	1,500,717	830,997	522,866	146,283	119,472	79,072	37,065	102,453	111,195
1908-09	364,913	1,077,813	1,288,754	816,171	530,751	141,464	137,857	82,778	41,513	49,420	88,956
1909-10	420,262	1,131,021	1,335,713	798,133	553,256	163,160	122,687	86,816	54,856	49,420	101,805
1910-11	398,029	1,180,913	1,649,145	914,270	564,969	150,236	163,333	71,659	61,775	74,130	148,260
1911-12	473,877	1,253,076	1,944,677	981,481	556,963	137,743	...	...	...	...	...

II.—TONS OF BEETS HARVESTED (2000 lbs.)

Years.	United States.*	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Spain.	Denmark.	Italy.
1886-87	9,156,422	5,192,494	4,725,657	5,398,051	1,146,392	·	·	62,153	·	·	·
1887-88	7,676,374	4,710,691	3,556,379	3,984,409	1,168,438	·	·	92,158	·	·	·
1888-89	8,703,963	5,068,308	5,354,411	4,654,977	1,267,645	·	·	94,920	·	·	·
1889-90	10,827,491	4,825,405	6,975,638	7,359,012	2,083,347	·	·	150,809	·	·	·
1890-91	11,710,085	5,456,958	7,562,880	7,164,846	1,962,094	·	·	240,554	·	·	·
1891-92	72,530	10,458,625	4,742,856	7,369,537	6,204,631	1,543,220	·	286,669	·	·	·
1892-93	128,887	10,815,701	4,045,074	7,909,664	6,027,258	1,730,611	·	305,825	·	·	·
1893-94	195,896	11,733,268	6,226,446	7,056,043	5,787,287	2,204,600	·	412,218	·	·	·
1894-95	·	16,006,530	5,959,034	9,402,619	7,867,926	2,511,039	·	692,774	·	·	·
1895-96	·	12,886,945	6,065,626	6,349,248	5,965,079	1,937,843	901,681	589,385	·	·	·
1896-97	·	15,125,321	6,323,015	8,671,243	7,457,060	2,578,280	1,406,535	981,312	·	·	·
1897-98	389,635	15,099,185	6,573,347	7,567,290	7,056,989	1,959,889	992,070	789,402	·	·	·
1898-99	·	13,393,653	6,645,980	8,390,156	6,730,218	1,649,041	1,237,332	530,131	326,281	·	·
1899-00	794,658	13,711,841	8,061,817	9,351,913	8,150,931	2,181,452	1,377,875	685,882	381,396	·	·
1900-01	811,654	14,609,784	7,174,981	8,165,838	9,609,233	2,714,965	1,350,318	965,518	438,715	·	·
1901-02	1,685,688	17,650,983	9,116,732	9,859,743	10,307,443	2,762,364	1,634,711	996,250	498,239	·	·
1902-03	1,895,812	12,423,999	9,707,010	7,860,060	6,908,055	1,588,414	784,727	556,681	333,997	·	·
1903-04	2,076,994	13,973,966	8,486,028	8,570,934	7,170,514	1,708,565	969,884	825,012	418,874	·	·
1904-05	2,071,539	11,101,496	7,097,397	6,841,976	5,147,139	1,317,249	965,615	613,850	353,828	704,369	826,725
1905-06	2,665,913	17,343,013	8,494,478	10,671,366	9,276,744	2,595,917	1,577,391	909,211	565,480	747,359	1,054,901
1906-07	4,236,112	15,637,818	11,169,443	9,895,347	6,035,516	2,032,641	1,322,760	1,134,597	520,286	774,917	1,056,003
1907-08	3,767,871	14,862,035	9,464,477	9,377,927	6,068,889	1,760,373	1,323,256	849,873	444,227	1,078,049	1,332,681
1908-09	3,414,891	13,017,261	9,013,948	8,744,987	6,557,914	1,886,697	1,488,105	976,638	480,603	972,229	1,683,212
1909-10	4,081,382	14,210,927	7,530,327	9,001,382	6,885,896	1,959,448	1,466,059	988,763	551,150	735,234	1,069,231
1910-11	4,047,292	17,360,102	14,421,391	11,301,331	6,076,319	2,182,554	1,589,517	1,218,152	839,953	534,616	1,693,133
1911-12	5,062,333	10,003,162	14,931,866	8,662,425	4,572,781	1,776,908	1,896,176	905,099	881,840	1,543,220	881,840

III.—TONS OF RAW SUGAR PRODUCED (2,000 lbs.)

Year.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	1,082,569	530,045	612,107	558,205	123,458	43,929	6,400	..	..	..	..
1887-88	1,056,955	479,898	449,738	447,258	127,867	39,770	10,115	..	..	..	..
1888-89	1,092,259	551,150	570,550	477,075	130,071	45,602	9,790	..	..	..	..
1889-90	1,390,389	473,989	814,651	815,261	229,278	73,956	16,121	..	..	..	..
1890-91	1,472,916	573,196	845,978	707,236	206,130	81,093	22,740	..	..	..	..
1891-92	6,669	1,320,584	595,242	853,729	672,183	177,470	49,592	29,588	..	..	..
1892-93	15,045	1,356,749	445,456	874,190	605,383	187,391	72,032	32,981	..	..	..
1893-94	25,105	1,505,743	716,495	919,324	595,132	251,324	79,391	47,583	..	..	..
1894-95	25,003	2,014,975	655,869	1,151,437	820,332	272,268	97,355	80,347	..	..	..
1895-96	36,363	1,804,528	792,003	860,991	688,386	243,608	108,257	68,468	..	..	..
1896-97	46,711	2,007,534	793,105	1,025,018	774,366	308,644	189,687	116,332	..	..	..
1897-98	50,272	2,033,082	793,656	904,308	851,968	268,961	138,513	98,033	..	..	..
1898-99	40,408	1,898,633	832,237	1,145,314	861,888	233,688	165,084	65,384	..	..	..
1899-00	90,810	1,979,155	984,354	1,208,199	1,012,352	299,826	188,526	89,078	43,872	..	..
1900-01	95,646	2,181,582	984,905	1,194,152	1,212,640	358,248	196,288	126,471	55,666	..	..
1901-02	205,117	2,537,766	1,186,350	1,423,208	1,223,112	358,248	223,987	138,205	63,713	..	..
1902-03	242,672	1,972,092	1,289,250	1,151,672	907,965	222,665	112,876	79,855	42,769	..	..
1903-04	267,337	2,117,668	1,271,724	1,277,347	875,777	223,546	136,134	118,167	50,596	..	..
1904-05	269,014	1,769,674	1,024,919	971,701	677,584	188,273	150,464	92,634	48,611	78,043	91,491
1905-06	347,690	2,646,370	1,069,672	1,648,490	1,186,295	361,334	226,192	134,925	71,650	91,160	112,861
1906-07	537,346	2,471,407	1,586,210	1,466,720	823,528	310,628	197,753	179,908	72,972	98,987	127,652
1907-08	515,142	2,357,523	1,520,843	1,553,582	792,443	255,182	190,808	122,796	58,091	126,765	165,591
1908-09	473,204	2,291,924	1,370,710	1,525,142	872,581	282,189	236,223	151,676	72,146	121,253	196,871
1909-10	569,410	2,245,823	1,242,072	1,373,025	885,147	273,811	214,949	139,220	71,650	91,491	131,063
1910-11	566,857	2,854,847	2,324,530	1,678,582	783,956	312,171	239,089	191,690	120,151	77,161	202,162
1911-12	666,111	1,631,404	2,293,115	1,272,385	567,464	263,450	277,008	140,213	123,458	117,615	170,857

IV.—TONS OF BEETS HARVESTED PER ACRE (2,000 lbs.).

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	13.38	7.10	7.10	14.23	·	·	·	·	·	·	·
1887-88	11.78	7.16	·	9.99	·	·	·	·	·	·	·
1888-89	12.58	7.64	·	10.94	11.40	·	·	·	·	·	·
1889-90	14.39	7.36	10.35	14.44	17.68	·	·	·	·	·	·
1890-91	14.20	7.12	10.25	13.08	15.12	·	·	·	·	·	·
1891-92	10.14	12.14	6.25	9.10	11.27	11.78	·	·	·	·	·
1892-93	9.82	12.43	5.67	9.68	11.21	14.26	·	·	·	·	·
1893-94	9.97	12.29	7.73	8.15	10.65	15.60	·	·	·	·	·
1894-95	·	14.67	7.22	10.12	13.18	14.35	13.14	·	·	·	·
1895-96	·	13.82	7.11	8.89	11.79	13.39	·	12.80	·	·	·
1896-97	·	14.41	7.21	10.03	12.26	14.64	12.82	14.00	·	·	·
1897-98	9.44	13.98	6.62	10.11	12.36	14.37	11.22	13.50	·	·	·
1898-99	·	12.71	6.12	10.95	11.48	12.48	11.24	9.41	10.22	·	·
1899-00	5.87	13.00	6.73	11.63	12.42	14.72	12.56	10.50	11.02	·	·
1900-01	6.15	13.21	5.48	9.73	12.86	15.32	11.61	13.50	12.68	·	·
1901-02	9.63	14.92	6.75	11.00	13.35	16.06	13.79	13.90	13.91	·	·
1902-03	8.76	11.76	6.79	10.46	11.24	12.29	10.23	9.35	9.19	·	·
1903-04	8.56	13.57	6.41	11.23	12.25	11.70	9.73	12.19	12.11	·	12.39
1904-05	10.47	10.78	6.11	8.63	10.22	11.65	10.90	10.29	10.23	9.83	10.14
1905-06	8.67	14.88	6.53	11.62	13.59	14.72	13.17	13.26	15.06	9.34	10.87
1906-07	11.26	14.16	7.95	11.70	11.79	13.64	12.15	14.58	13.67	9.40	11.26
1907-08	10.16	13.36	6.31	11.29	11.61	12.03	11.66	11.02	11.99	10.99	13.01
1908-09	9.36	12.08	6.99	10.71	12.36	13.34	12.46	12.35	12.97	15.74	15.14
1909-10	9.71	12.56	5.64	11.28	12.45	12.01	10.63	11.94	13.28	14.88	12.02
1910-11	10.17	14.70	8.74	12.36	10.76	14.53	12.96	14.03	15.31	10.82	16.63
1911-12	10.68	7.96	7.68	8.83	8.21	10.88	13.77	12.63	13.29	11.90	10.41

COST OF PRODUCING SUGAR.

V.—POUNDS OF RAW SUGAR PRODUCED PER ACRE.

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	3,165	1,449	2,943	2,244	2,340	2,242	3,890	3,179	2,710	3,089	3,049
1887-88	3,243	1,458	2,244	2,148	2,294	2,583	3,200	2,127	2,441	2,252	2,972
1888-89	3,157	1,661	2,242	1,447	2,107	2,441	3,179	2,056	2,140	2,189	3,320
1889-90	3,697	1,447	2,189	2,294	2,140	2,252	3,556	3,133	2,945	3,459	3,353
1890-91	3,571	1,493	2,189	1,569	2,124	2,124	3,556	3,133	2,945	3,459	3,353
1891-92	1,864	3,065	2,120	1,249	2,124	2,124	3,556	3,133	2,945	3,459	3,353
1892-93	2,292	3,120	2,124	2,140	2,124	2,124	3,556	3,133	2,945	3,459	3,353
1893-94	2,556	3,153	1,779	2,124	2,124	2,124	3,556	3,133	2,945	3,459	3,353
1894-95	2,559	3,694	1,588	2,478	2,749	3,113	3,113	2,999	2,999	2,999	2,999
1895-96	3,169	3,878	1,958	2,412	2,722	3,365	3,365	4,045	4,045	4,045	4,045
1896-97	1,632	3,824	1,808	2,372	2,546	3,505	3,505	3,459	3,459	3,459	3,459
1897-98	2,436	3,764	1,599	2,416	2,984	3,945	3,945	3,857	3,857	3,857	3,857
1898-99	2,161	3,603	1,534	2,989	2,941	3,538	3,538	2,999	2,999	2,999	2,999
1899-00	1,342	3,754	1,644	3,005	3,084	4,045	4,045	3,437	3,437	3,437	3,437
1900-01	1,449	3,945	1,504	2,846	3,246	4,044	4,044	3,375	3,375	3,375	3,375
1901-02	2,343	4,290	1,757	3,176	3,168	4,166	4,166	3,780	3,780	3,780	3,780
1902-03	2,243	3,733	1,803	3,066	2,955	3,446	3,446	2,944	2,944	2,944	2,944
1903-04	2,204	4,112	1,922	3,346	2,992	3,062	3,062	2,731	2,731	2,731	2,731
1904-05	2,720	3,437	1,765	2,450	2,691	3,329	3,329	3,396	3,396	3,396	3,396
1905-06	2,262	4,540	1,645	3,590	3,475	4,096	4,096	3,776	3,776	3,776	3,776
1906-07	2,857	4,475	2,259	3,471	3,217	4,169	4,169	3,632	3,632	3,632	3,632
1907-08	2,777	4,240	2,027	3,739	3,031	3,489	3,489	3,362	3,362	3,362	3,362
1908-09	2,594	4,253	2,127	3,737	3,288	3,990	3,990	3,954	3,954	3,954	3,954
1909-10	2,710	3,971	1,860	3,441	3,200	3,356	3,356	3,119	3,119	3,119	3,119
1910-11	2,848	4,835	2,919	3,672	2,775	4,156	4,156	3,898	3,898	3,898	3,898
1911-12	2,811	2,604	2,358	2,593	2,038	3,226	3,226	4,022	4,022	4,022	4,022

VI.—RAW SUGAR EXTRACTION PERCENTAGE OF WEIGHT OF BEETS.

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	11.82	10.21	12.95	10.34	10.77	10.77	10.30	10.96	10.31	10.69	9.45
1887-88	13.77	10.19	12.65	11.23	10.94	10.26	10.26	10.31	10.31	10.31	10.31
1888-89	12.55	10.87	10.66	10.25	11.08	11.01	11.01	10.69	10.69	10.69	10.69
1889-90	12.84	9.82	10.71	11.19	9.87	10.51	10.51	10.32	10.32	10.32	10.32
1890-91	9.20	12.63	12.55	11.58	10.83	11.50	11.50	10.78	10.78	10.78	10.78
1891-92	11.67	12.55	11.01	11.05	10.04	10.83	10.83	11.54	11.54	11.54	11.54
1892-93	12.82	12.83	11.51	13.03	10.28	11.40	11.40	11.60	11.60	11.60	11.60
1893-94	12.95	12.59	11.01	12.25	10.43	10.84	10.84	11.61	11.61	11.61	11.61
1894-95	14.02	13.06	13.56	11.54	12.57	12.57	12.01	11.85	11.85	11.85	11.85
1895-96	13.27	12.54	11.82	10.38	11.97	13.49	13.49	12.42	12.42	12.42	12.42
1896-97	13.46	12.07	11.95	12.07	13.72	13.72	13.96	12.33	12.33	12.33	12.33
1897-98	14.18	12.52	13.65	12.81	14.17	13.34	13.34	12.03	12.03	12.03	12.03
1898-99	11.43	14.43	12.21	12.42	13.74	13.68	12.99	11.50	11.50	11.50	11.50
1899-00	11.78	14.93	13.73	14.62	12.62	13.20	14.54	13.10	12.69	12.69	12.69
1900-01	12.17	14.38	13.01	14.43	11.87	12.97	13.70	13.87	12.79	12.79	12.79
1901-02	12.80	15.87	13.28	14.65	13.14	14.02	14.38	14.34	12.80	12.80	12.80
1902-03	12.87	15.15	14.90	12.21	13.08	14.04	14.32	12.08	12.08	12.08	12.08
1903-04	12.99	15.94	14.44	14.20	13.16	14.29	15.58	15.09	13.74	13.74	13.74
1904-05	13.04	15.26	12.59	14.70	12.79	13.92	14.34	13.63	12.67	12.67	12.67
1905-06	12.68	15.80	14.21	14.82	13.64	15.28	14.95	15.78	14.02	12.77	12.77
1906-07	13.67	15.86	16.07	16.57	13.06	14.50	14.42	14.45	13.07	11.76	11.76
1907-08	13.86	15.21	17.44	13.31	14.96	15.87	15.53	15.00	12.47	12.47	12.47
1908-09	13.95	16.80	16.49	15.25	12.85	13.97	14.66	14.08	13.00	12.44	12.44
1909-10	14.01	16.44	16.12	14.85	12.90	14.30	15.04	15.74	14.31	14.43	14.43
1910-11	13.16	16.36	15.36	14.69	12.41	14.83	14.61	15.49	15.03	13.34	11.07

VII.—RAW SUGAR EXTRACTION, POUNDS PER TON OF BEETS.

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	236.46	204.16	259.06	206.82	215.39	205.94	219.51	206.43	215.69	206.43	218.06
1887-88	275.38	203.75	252.92	224.50	218.87	205.21	206.28	213.79	213.79	213.79	213.79
1888-89	250.98	217.49	213.11	204.97	205.21	220.11	213.79	189.06	189.06	189.06	189.06
1889-90	256.83	196.46	214.15	221.57	220.11	210.11	229.99	216.56	215.69	215.69	215.69
1890-91	251.56	209.78	223.72	197.38	216.67	228.00	216.56	228.00	230.86	230.86	230.86
1891-92	183.90	252.53	251.01	231.69	200.88	205.67	216.86	216.86	231.96	231.96	231.96
1892-93	233.46	250.89	220.25	221.04	205.58	208.53	210.11	210.11	210.11	210.11	210.11
1893-94	256.31	256.66	230.15	244.92	244.92	240.42	240.42	240.42	240.42	240.42	240.42
1894-95	251.77	220.13	220.13	220.13	220.81	220.81	220.81	220.81	220.81	220.81	220.81
1895-96	288.55	280.49	261.14	271.21	265.42	265.42	269.72	269.72	273.09	273.09	273.09
1896-97	235.68	265.45	250.86	236.42	207.69	239.42	274.47	279.24	248.37	248.37	248.37
1897-98	258.05	269.30	241.48	239.00	241.45	273.01	256.12	283.42	266.84	246.67	240.54
1898-99	288.68	288.68	250.45	273.01	244.20	258.39	248.40	274.89	273.65	259.84	230.06
1899-00	235.68	298.65	274.64	292.48	252.39	263.91	290.73	290.73	261.98	253.77	253.77
1900-01	243.36	287.55	260.26	288.70	237.31	259.38	274.04	274.04	277.45	255.75	255.75
1901-02	256.01	317.46	265.63	293.04	262.87	280.36	287.68	287.68	286.90	256.10	256.10
1902-03	257.48	303.09	299.67	298.06	244.27	261.68	280.72	280.72	286.46	241.58	270.00
1903-04	259.72	318.82	288.82	284.04	263.29	285.86	311.64	301.81	274.76	221.59	221.59
1904-05	260.84	305.18	251.85	293.98	255.76	162.82	286.79	272.55	253.41	243.95	243.95
1905-06	253.69	316.08	284.16	296.45	272.89	305.64	299.00	315.54	280.51	255.47	241.76
1906-07	273.44	317.25	321.38	331.33	261.15	289.92	288.39	288.97	261.54	235.17	248.51
1907-08	277.14	352.14	304.13	348.80	266.12	299.14	317.48	310.61	300.23	249.43	233.92
1908-09	279.03	316.07	329.89	305.07	257.09	279.48	293.23	281.60	260.00	248.87	245.15
1909-10	280.11	328.89	322.37	297.05	258.03	286.06	300.88	314.72	286.09	288.65	238.80
1910-11	263.16	327.15	307.14	293.77	248.19	292.18	309.88	300.67	266.74	266.74	221.43
Average 1907-08 to 11-12 (5 yrs.)	274.57	328.30	316.98	315.20	258.11	290.52	298.42	301.15	281.70	257.77	237.56

VIII.—NUMBER OF FACTORIES IN OPERATION

Year.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	401	230	217	391	100	30	3	3	3	3	3
1887-88	391	218	187	375	98	30	30	4	4	4	4
1888-89	396	220	203	380	101	30	30	4	4	4	4
1889-90	401	220	204	373	103	30	30	6	6	6	6
1890-91	406	222	209	377	106	30	30	8	8	8	8
1891-92	6	403	225	210	370	107	30	10	10	10	10
1892-93	6	401	224	214	368	108	30	10	10	10	10
1893-94	6	405	225	216	370	109	30	17	17	17	17
1894-95	5	405	226	220	367	111	30	18	18	18	18
1895-96	6	397	229	218	356	111	30	19	19	19	19
1896-97	7	399	236	217	358	111	30	19	19	19	19
1897-98	9	402	239	215	343	111	30	19	19	19	19
1898-99	15	402	244	214	344	110	31	19	19	19	19
1899-00	31	399	268	213	339	109	31	19	19	19	19
1900-01	34	395	275	213	334	107	32	19	19	19	19
1901-02	36	395	278	216	332	107	32	19	19	19	19
1902-03	41	393	278	216	319	100	24	20	20	20	20
1903-04	49	384	275	215	292	101	29	21	21	21	21
1904-05	48	374	278	206	270	90	26	22	22	22	22
1905-06	52	376	280	207	292	91	28	22	22	22	22
1906-07	63	369	281	206	273	83	28	19	19	19	19
1907-08	63	365	278	201	255	82	28	20	20	20	20
1908-09	62	358	277	204	251	81	27	21	21	21	21
1909-10	65	356	274	202	244	79	27	21	21	21	21
1910-11	61	354	275	203	239	77	27	21	21	21	21
1911-12	66	341	29	196	233	74	8	8	8	8	8

IX. ACRES OF BEETS PER FACTORY

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	.	1,706	3,180	.	970	.	.	.	.	.	.
1887-88	.	1,667	3,019	.	1,062	.	.	.	.	.	.
1888-89	.	1,747	3,016	.	1,119	1,100	.	.	.	.	.
1889-90	.	1,875	2,978	3,303	1,366	1,144	.	.	.	.	.
1890-91	.	2,031	3,457	3,529	1,452	1,223	.	.	.	.	.
1891-92	1,192	2,137	3,373	3,858	1,488	1,223	.	.	.	.	.
1892-93	2,188	2,169	3,184	3,818	1,461	1,123	.	.	.	.	.
1893-94	3,274	2,358	3,579	4,008	1,469	1,296	.	.	.	.	.
1894-95	3,907	2,693	3,653	4,224	1,626	1,575	.	.	.	.	.
1895-96	3,824	2,344	3,723	3,271	1,418	1,304	.	.	.	.	.
1896-97	8,177	2,631	3,716	3,982	1,699	1,586	3,656	3,688	.	.	.
1897-98	4,585	2,687	4,153	3,481	1,664	1,228	2,947	3,077	.	.	.
1898-99	2,493	2,621	4,448	3,580	1,703	1,200	3,551	2,965	.	.	.
1899-00	4,364	2,642	4,466	3,774	1,936	1,359	3,538	3,435	4,942	.	.
1900-01	3,882	2,800	4,763	3,939	2,236	1,656	3,635	3,764	4,942	.	.
1901-02	4,863	2,994	4,856	4,149	2,325	1,607	3,703	3,771	5,118	.	.
1902-03	5,278	2,688	5,145	3,477	1,926	1,292	3,195	2,977	5,189	.	.
1903-04	4,950	2,682	4,810	3,551	2,004	1,445	3,437	3,224	4,942	.	2,779
1904-05	4,120	2,753	4,178	3,850	1,864	1,256	3,407	2,712	4,942	.	2,471
1905-06	5,910	3,100	4,643	4,434	2,338	1,938	4,278	3,116	5,365	2,667	3,032
1906-07	5,969	2,993	4,999	4,102	1,875	1,795	3,889	4,096	5,436	2,746	2,841
1907-08	5,888	3,046	5,398	4,134	2,050	1,783	4,064	3,854	5,295	2,972	3,104
1908-09	5,885	3,010	4,652	4,000	2,114	1,746	4,424	3,765	5,295	1,992	3,369
1909-10	6,465	3,177	4,874	3,951	2,267	2,065	5,105	3,941	5,930	1,647	2,965
1910-11	6,525	3,335	5,996	4,503	2,363	1,951	4,544	4,134	6,857	1,453	2,908
1911-12	7,179	3,674	6,970	5,007	2,390	2,207	5,101	3,412	7,721	2,556	4,007

X.—TONS OF BEETS PER FACTORY (2,000 lbs.).

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	22,834	22,576	21,777	13,806	11,464	•	•	20,717	•	•	•
1887-88	19,633	21,608	19,018	10,625	11,922	•	•	30,719	•	•	•
1888-89	21,980	23,037	26,376	12,250	12,551	•	•	23,730	•	•	•
1889-90	27,001	31,024	37,295	19,729	20,227	•	•	37,702	•	•	•
1890-91	28,843	24,615	36,186	19,005	18,510	•	•	40,092	•	•	•
1891-92	12,088	25,952	21,079	35,093	16,769	14,423	•	35,834	•	•	•
1892-93	21,481	26,972	18,058	36,961	16,378	16,024	•	30,563	•	•	•
1893-94	32,649	28,971	27,673	32,667	15,641	20,225	•	41,222	•	•	•
1894-95	•	39,522	26,367	42,739	21,438	22,621	•	40,751	•	•	•
1895-96	•	32,410	26,487	29,124	16,756	17,458	30,056	32,772	•	•	•
1896-97	•	37,908	26,792	39,959	20,830	23,228	46,884	51,648	•	•	•
1897-98	43,292	37,560	27,503	35,206	20,574	17,657	33,069	41,547	•	•	•
1898-99	•	33,318	27,237	39,206	19,564	14,991	39,914	27,901	46,612	•	•
1899-00	25,634	34,366	30,081	43,905	24,044	20,013	44,448	36,088	54,499	•	•
1900-01	29,872	36,967	26,090	38,337	28,770	25,374	42,197	50,816	62,674	•	•
1901-02	46,824	44,686	32,794	45,646	31,047	25,816	51,085	52,434	71,177	•	•
1902-03	46,239	31,613	34,917	36,389	21,655	15,884	32,697	27,834	47,714	•	•
1903-04	42,377	36,391	30,858	39,864	24,557	16,916	33,444	39,286	59,839	•	•
1904-05	48,157	29,683	25,530	33,213	19,963	14,636	37,139	27,902	50,548	22,012	34,447
1905-06	51,267	46,125	30,337	51,552	31,769	28,527	56,335	41,327	80,783	24,912	25,052
1906-07	67,239	42,379	39,748	48,036	22,108	24,490	47,241	59,715	74,327	25,831	32,966
1907-08	59,807	40,718	34,044	46,656	23,800	21,468	47,259	42,494	63,461	32,668	32,000
1908-09	55,078	36,361	32,541	42,867	26,127	23,293	55,115	46,506	68,658	31,362	40,384
1909-10	62,790	39,918	27,482	44,561	28,221	24,803	54,298	47,083	78,735	24,509	35,641
1910-11	66,350	49,039	52,441	55,677	25,424	28,344	58,871	58,007	104,994	15,724	48,375
1911-12	76,702	29,247	53,519	44,196	19,626	24,012	70,228	43,099	102,652	30,408	41,709

XI.—TONS OF RAW SUGAR PER FACTORY (2,000 lbs.).

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	2,699	2,304	2,820	1,427	1,234	1,464	2,133	2,371	3,371	3,371	3,371
1887-88	2,703	2,201	2,405	1,192	1,304	1,325	1,520	2,448	2,448	2,448	2,448
1888-89	2,758	2,505	2,810	1,255	1,287	1,226	2,465	4,030	4,030	4,030	4,030
1889-90	3,467	2,154	3,993	2,185	1,944	2,703	3,790	3,790	3,790	3,790	3,790
1890-91	3,627	2,581	4,047	1,875	1,816	1,658	1,653	3,698	3,698	3,698	3,698
1891-92	1,111	3,276	2,645	4,085	1,645	1,735	2,401	3,298	3,298	3,298	3,298
1892-93	2,507	3,383	1,988	4,256	1,608	2,305	2,646	4,758	4,758	4,758	4,758
1893-94	4,184	3,717	3,184	5,233	2,235	2,452	3,245	4,726	4,726	4,726	4,726
1894-95	5,000	4,975	2,902	3,949	1,933	2,194	3,608	3,803	3,803	3,803	3,803
1895-96	6,060	4,545	3,458	4,723	2,163	2,780	6,322	6,122	6,122	6,122	6,122
1896-97	6,673	5,031	3,360	4,206	2,483	2,123	4,617	5,159	5,159	5,159	5,159
1897-98	5,585	5,057	3,320	5,351	2,505	2,124	5,325	3,441	5,007	5,007	5,007
1898-99	2,693	4,723	3,410	5,672	2,986	2,750	6,081	4,688	6,267	6,267	6,267
1899-00	2,929	4,960	5,672	5,672	2,986	2,750	6,134	6,656	7,952	7,952	7,952
1900-01	2,813	5,523	3,581	5,606	3,630	3,348	6,999	7,273	9,100	9,100	9,100
1901-02	5,697	6,424	4,267	6,588	3,684	3,348	7,062	9,421	10,424	10,424	10,424
1902-03	5,918	5,018	4,637	5,331	2,846	2,226	4,703	3,992	6,109	6,109	6,109
1903-04	5,455	5,514	3,312	5,941	2,999	2,213	4,694	5,627	7,228	7,228	7,228
1904-05	5,604	4,731	3,686	7,964	2,509	2,091	5,787	4,210	6,944	6,944	6,944
1905-06	6,686	7,035	3,320	7,577	4,062	3,970	8,078	6,133	10,235	10,235	10,235
1906-07	8,529	6,697	5,645	7,120	3,016	3,742	7,062	9,421	10,424	10,424	10,424
1907-08	8,176	6,459	5,470	7,729	3,107	3,111	6,814	6,139	8,298	8,298	8,298
1908-09	7,632	6,402	4,948	7,476	3,476	3,483	8,749	7,222	10,306	10,306	10,306
1909-10	8,760	4,533	6,797	3,627	3,465	7,961	6,629	10,235	3,049	3,049	3,049
1910-11	9,292	8,452	8,268	3,280	4,054	8,855	9,128	15,018	2,269	2,269	2,269
1911-12	10,092	4,784	6,491	2,435	3,560	10,259	6,676	15,432	4,065	4,065	4,065

XII.—CONSUMPTION OF SUGAR (2,000 lb. TONS).

Years.	United States.	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	1,562,638	362,852	422,800	263,347	583,396	35,274	.....	.....	.....	.....	.....
1887-88	1,508,180	444,509	377,924	368,961	520,544	34,171	.....	.....	.....	.....	.....
1888-89	1,545,688	383,734	395,902	210,572	500,268	34,171	.....	.....	.....	.....	.....
1889-90	1,596,368	549,429	415,229	316,365	551,540	48,501	.....	.....	.....	.....	.....
1890-91	1,937,672	577,552	416,914	311,588	553,325	46,297	.....	.....	.....	.....	.....
1891-92	1,959,836	586,755	437,567	335,737	576,561	40,785	.....	.....	.....	.....	.....
1892-93	2,131,295	614,519	443,764	354,105	546,221	57,320	.....	.....	.....	.....	.....
1893-94	2,468,191	633,278	444,443	345,430	520,698	70,547	50,706	72,046	.....	.....	.....
1894-95	2,160,837	678,024	481,357	402,039	578,896	69,445	51,808	79,694	.....	.....	.....
1895-96	2,247,341	820,516	557,720	417,600	505,578	63,933	52,359	79,546	.....	.....	.....
1896-97	2,799,196	619,363	554,998	373,217	603,858	66,138	53,462	100,653	.....	.....	.....
1897-98	1,734,368	780,690	592,395	411,034	559,459	58,422	54,564	94,849	.....	.....	.....
1898-99	2,302,405	834,549	634,756	426,904	624,941	41,887	63,933	100,147	72,057	.....	.....
1899-00	2,238,588	937,289	668,683	396,379	666,840	51,808	66,028	107,481	78,235	.....	.....
1900-01	2,792,504	854,631	724,891	420,335	597,166	61,729	68,784	111,332	89,113	.....	.....
1901-02	2,509,486	821,699	782,840	430,309	528,002	72,752	73,854	116,844	91,061	.....	.....
1902-03	3,190,083	895,016	808,669	420,939	895,509	55,115	77,933	118,696	85,725	.....	.....
1903-04	2,830,950	1,253,522	935,632	555,517	856,046	101,632	88,184	122,161	94,266	.....	.....
1904-05	3,012,886	1,064,837	1,038,587	493,500	664,246	87,853	99,207	119,633	78,284	.....	.....
1905-06	3,245,647	1,244,063	1,066,255	580,361	714,731	95,900	110,230	130,616	95,580	.....	.....
1906-07	3,544,834	1,280,046	1,074,302	590,833	704,039	104,498	114,639	140,296	113,173	.....	.....
1907-08	3,295,411	1,320,617	1,165,682	596,895	716,054	110,781	115,411	141,996	96,556	.....	.....
1908-09	3,641,682	1,378,124	1,220,246	635,145	740,194	116,293	121,694	140,604	117,500	.....	.....
1909-10	3,680,065	1,393,509	1,404,330	652,562	742,399	120,592	123,788	144,606	95,733	.....	.....
1910-11	3,611,266	1,525,501	1,429,817	732,699	843,039	132,607	132,056	143,299	143,299	.....	.....
1911-12	3,934,835	1,331,799	1,471,570	611,777	764,901	114,639	132,276	143,299	143,299	.....	.....

(No data.)

(No data.)

COST OF PRODUCING SUGAR.

XIII.—IMPORTS OF SUGAR (2,000 lb. TONS).

Years.	United States.*	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1880-87	1,270,270	5,066	80		159,485	15,873	127,602	31,836	22,718	58,156	150,868
1887-88	1,040,640	6,431	95		197,771	15,542	116,241	32,123	16,941	53,831	45,822
1888-89	1,125,693	4,559	69		200,264	14,109	110,120	32,052	23,172	60,181	86,177
1889-90	1,186,426	4,325	659		149,695	14,440	160,385	33,033	20,769	84,046	100,604
1890-91	1,499,299	7,453	129		152,610	14,550	142,086	26,061	24,016	55,467	92,973
1891-92	1,558,068	8,937	117		170,498	15,873	162,699	26,949	35,968	84,313	92,656
1892-93	1,627,430	2,264	30,746		183,928	14,550	141,315	29,301	26,665	28,059	89,259
1893-94	1,909,510	1,210	340		175,870	11,464	177,911	18,852	28,377	46,951	83,021
1894-95	1,587,501	1,357	204		140,123	10,031	162,148	3,351	26,274	51,730	80,371
1895-96	1,658,753	1,566			162,310	12,236	140,213	44,059	23,599	41,618	84,781
1896-97	2,164,309	1,689			147,872	8,157	90,278	721	30,114	30,970	84,431
1897-98	1,031,101	1,432			112,737	13,228	125,111	562	28,885	9,599	80,577
1898-99	1,679,497	1,323			122,539	14,661	79,255	13,591	35,297	10,272	69,103
1899-00	1,695,662	1,366			104,383	14,220	62,759	13,774	37,145	525	59,713
1900-01	1,985,156	1,485			107,550	16,314	59,864	508	35,795	129	42,380
1901-02	1,510,246	2,115			102,514	16,975	100,012	373	29,022	80	23,677
1902-03	2,098,667	2,360			133,378	15,432	125,204	998	44,143	170	7,239
1903-04	1,819,526	7,564			99,648	13,669	102,270	5,498	43,682	128	2,465
1904-05	1,801,468	7,062			101,191	6,834	107,946	24,450	29,704	53	5,626
1905-06	1,954,979	3,271			94,798	7,165	77,003	4,863	23,944	44	15,916
1906-07	2,183,338	3,143			121,033	6,283	110,230	440	40,221	49	26,166
1907-08	1,666,795	12,721			128,197	7,165	80,137	564	38,486	56	5,398
1908-09	2,052,856	2,470			122,796	10,692	80,027	425	47,011	83	13,057
1909-10	1,959,297	2,429			126,213	10,141	54,013	129	25,760	45	7,216
1910-11	1,853,792	2,041			171,187	7,385	80,468				
1911-12	1,834,524	1,984			8,818	8,818	82,673				

(Negligible quantity.)

(Negligible quantity.)

* Total imports exclusive of non-contiguous territory.

XIV. EXPORTS OF SUGAR (2,000 lb. TONS).

Years.	United States.*	Germany.	Russia.	Austria-Hungary.	France.	Belgium.	Netherlands.	Sweden.	Denmark.	Spain.	Italy.
1886-87	102,121	728,761	62,465	319,260	138,008	109,238	109,192				
1887-88	30,200	567,373	62,418	207,665	126,379	106,923	113,001				
1888-89	9,876	674,883	76,420	314,627	234,523	110,671	112,208				
1889-90	23,748	820,272	36,958	452,150	435,124	200,067	119,476				
1890-91	56,526	826,974	95,914	520,790	348,944	173,392	150,516				
1891-92	9,707	763,796	123,100	516,558	265,445	146,275	147,192				
1892-93	14,616	800,444	23,973	530,560	265,541	165,345	160,875				
1893-94	32,162	802,829	93,077	540,216	313,245	205,799	147,378				
1894-95	13,617	1,153,053	94,216	499,214	367,172	174,825	147,322				
1895-96	5,372	1,036,146	200,017	556,145	273,798	185,186	176,377				
1896-97	24,385	1,364,119	129,333	622,916	396,936	258,820	194,506				
1897-98	9,964	1,148,377	158,117	543,935	511,106	197,753	165,789				
1898-99	8,482	1,111,160	106,272	792,574	299,225	234,790	174,167				
1899-00	13,459	1,073,489	208,248	779,778	623,847	286,598	164,194				
1900-01	7,008	1,261,307	178,955	763,926	796,723	317,021	167,900				
1901-02	7,588	1,340,933	149,712	901,164	662,724	211,311	188,757				
1902-03	9,765	1,299,744	217,720	859,086	252,537	174,163	171,068				
1903-04	20,804	962,995	230,381	658,796	278,772	151,346	158,727				
1904-05	13,714	844,936	229,278	536,820	280,271	156,968	242,043				
1905-06	18,553	1,262,480	78,153	955,915	428,464	210,539	188,080				
1906-07	21,440	1,216,466	158,731	879,415	362,557	229,609	186,730				
1907-08	21,843	1,058,335	355,933	965,394	327,273	161,597	210,098				
1908-09	48,940	924,185	325,399	931,995	253,749	170,526	195,107				
1909-10	94,652	863,584	97,443	768,524	277,559	144,181	155,424				
1910-11	44,718	1,230,757	359,791	890,217	175,817	183,864	209,878				
1911-12	51,431	258,710	551,150	696,654	164,233	170,857	187,391				

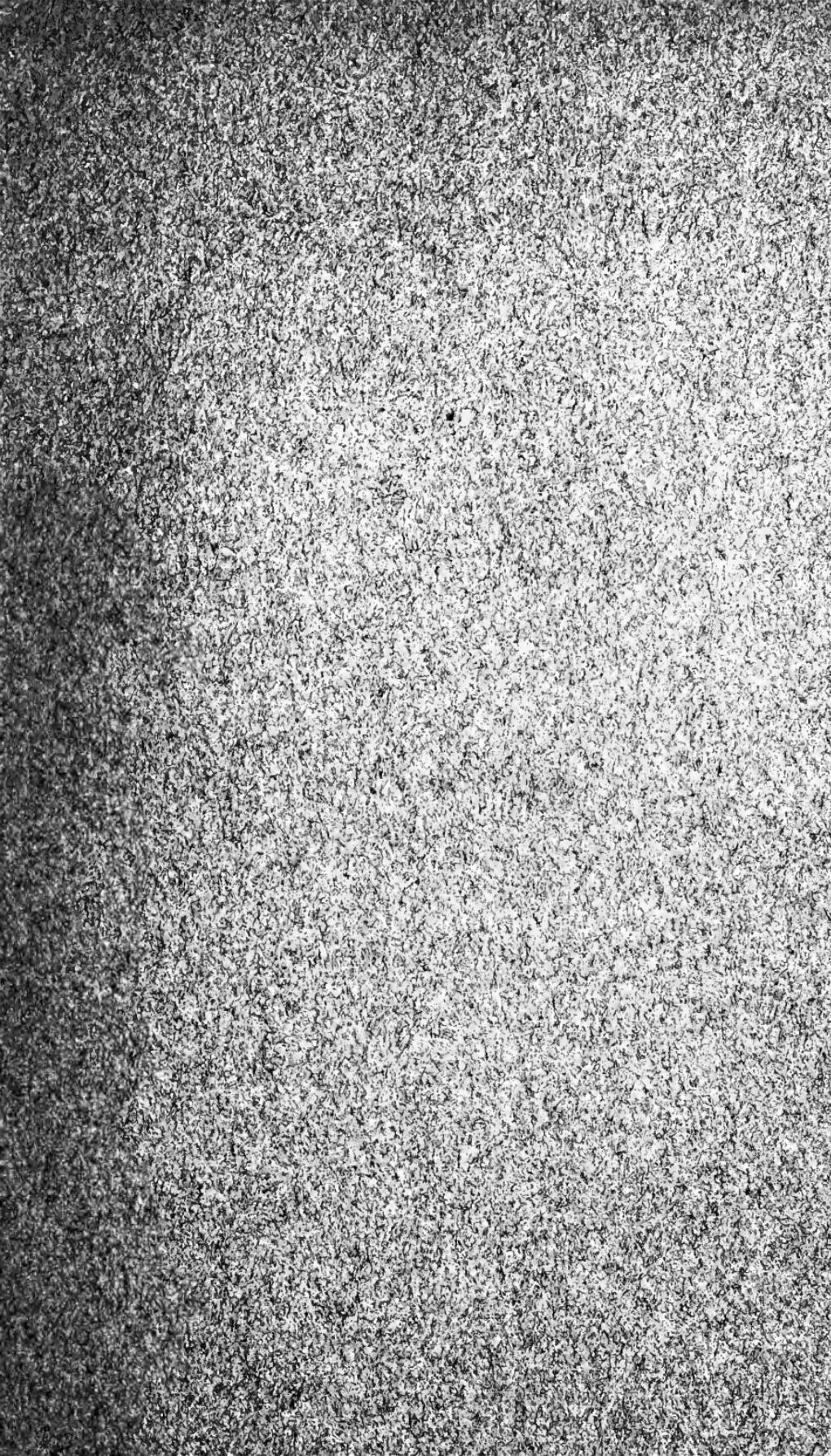
* Figures relate to continental United States after 1900, and include all exports.

COST OF PRODUCING SUGAR.

XV. SUGAR PRODUCTION AND SUGAR IMPORTS OF THE UNITED STATES* (2,000 lb. TONS).

	Domestic production	Imports from Insular possessions.			From foreign countries.			Percentage of total sugar consumption derived from				
		Louisiana and Texas cane.	Total domestic beet and cane.	Hawaii. ²	Porto Rico.	Philippine Islands.	Total from insular possessions.	Total insular and domestic.	From all other for. countries.	In- dus- trial.	Cuba.	Other foreign
1886-87	95,641	96,537	109,145	65,722	123,084		297,952	394,489	697,358	572,912	6,2	41.0
1887-88	187,952	188,238	114,270	57,827	137,405		309,502	497,740	604,587	436,053	20.5	38.9
1888-89	172,378	174,462	121,662	40,670	93,076		255,409	429,871	516,043	609,650	11.3	33.0
1889-90	150,642	153,110	112,229	38,463	129,888		280,580	433,690	520,538	665,888	9.6	31.9
1890-91	248,585	246,459	156,128	40,006	36,305		242,439	494,898	690,283	809,016	13.0	9.0
1891-92	185,290	191,288	131,306	40,237	48,643		220,186	411,474	991,770	566,298	9.8	11.2
1892-93	249,228	262,688	144,777	49,809	61,207		255,793	518,481	921,826	705,604	12.3	50.2
1893-94	305,413	327,757	163,287	37,773	62,026		263,086	590,843	1,063,751	845,759	13.3	42.8
1894-95	364,696	387,199	137,193	28,176	34,385		199,754	586,953	922,882	664,619	17.9	42.3
1895-96	271,817	304,543	176,088	40,791	72,538		289,417	593,960	546,586	1,112,167	13.6	12.9
1896-97	322,088	364,128	215,609	43,304	36,232		295,144	659,272	288,895	1,875,414	13.0	10.5
1897-98	354,126	399,372	249,888	49,226	14,745		313,859	713,231	220,113	810,988	23.0	10.2
1898-99	284,395	320,762	231,212	53,604	25,813		310,628	631,390	331,772	1,347,725	13.9	18.1
1899-00	161,275	243,004	252,357	36,279	24,745		313,381	556,385	352,728	1,342,934	10.9	14.3
1900-01	311,887	397,969	345,439	68,601	2,347		416,387	814,356	549,702	1,435,454	14.3	14.9
1901-02	364,325	548,931	360,277	* 91,909	5,712		457,897	1,006,828	492,108	1,018,138	21.9	19.5
1902-03	372,903	591,309	387,413	113,072	* 9,387		509,871	1,101,180	1,197,964	900,703	18.5	40.4
1903-04	262,976	503,581	368,246	129,616	30,785		528,647	1,032,228	1,409,779	409,747	17.8	12.5
1904-05	392,000	634,113	416,361	135,660	38,999		591,019	1,225,132	1,028,842	772,626	21.0	14.3
1905-06	383,040	695,961	373,301	205,272	34,687		613,260	1,309,221	1,390,951	564,028	21.4	19.6
1906-07	272,160	755,772	410,507	204,075	12,582		627,165	1,382,937	655,105	561,200	21.3	42.4
1907-08	304,240	857,868	538,785	234,603	19,204		792,592	1,650,460	1,154,595	512,200	26.0	17.3
1908-09	414,400	840,284	511,432	244,226	41,824		797,482	1,637,766	1,431,018	621,837	22.0	24.4
1909-10	375,200	887,469	555,297	484,520	* 87,935		927,752	1,815,446	1,754,829	204,468	22.4	39.3
1910-11	348,320	858,492	505,608	322,917	115,176		943,701	1,802,193	1,673,799	179,993	22.8	47.1
1911-12 ¹	362,880	962,380	602,733	367,145	217,785		1,187,663	2,150,043	1,593,315	241,209	24.5	5.5
											30.2	4.8

* See Statistical Abstract, 1911, pp. 564-65. Cuban imports from Commerce and Navigation. Total domestic production includes refined beet. The figures vary slightly from those of the Department of Agriculture. Preliminary figures. ² Free of duty since Sept. 9, 1876. ³ May 1, 1900, reduced from full duty to 15%. July 26, 1901, admitted free of duty. March 8, 1902, reduced from full duty to 75%; August 5, 1909, 300,000 tons per annum admitted free of duty. December 27, 1903, duty reduced 20%. ⁴ Full duty paying.



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